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OFFICIAL PUBLICATION OF THE CORYNDON
MEMORIAL MUSEUM.
(MUSEUMS TRUSTEES OF KENYA).

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OCT 31 1940

PLATE 1.



Abdim's stork in flight.

PLATE 2.



Abdim's stork in flight.

PLATE 3.



Abdim's stork at waterhole.



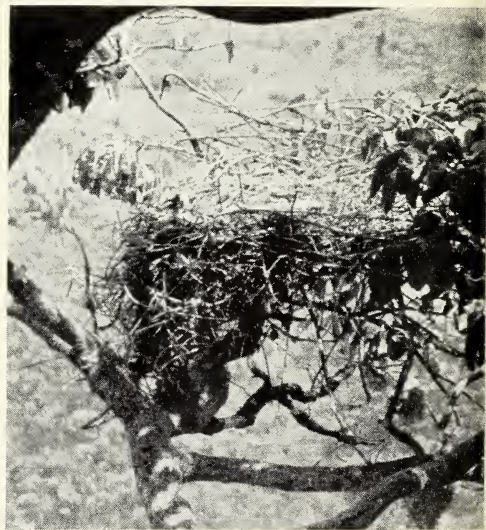
Abdim's stork with a White stork in flight.



Nesting tree of Abdim's stork
Showing how the nest was visited.



Nesting tree of Abdim's stork.
at Nambare.



Nest of Abdim's stork.

FIELD NOTES ON ABDIM'S STORK IN TWO KENYA PROVINCES.

By M. E. W. NORTH, M.B.O.U.

I. DISTRIBUTION OF ABDIM'S STORK (*Sphenorynchus abdimii*) IN NYANZA AND THE NORTHERN FRONTIER.

(1) IN NYANZA.

(a) *North Kavirondo District*. (Period of observation, November, 1938, till April, 1939.) Both resident and migratory. Residents were found breeding either singly, or in small colonies, in the part of the district that lies south of the Kakamega-Mumias-Busia road, from January onwards. A large isolated forest tree in cultivated land was usually chosen. Migrants were seen in large flocks in January-February. They seemed to be following the locusts, and did not remain for long in any one locality. To what extent the migrants became residents, or vice versa, could not be ascertained in the time available.

(b) *South Kavirondo District* (April-July, 1939). Status uncertain. Two birds were often observed in the vicinity of Kisii station during the period I resided there; they looked like a pair about to breed, but, as far as I could see, did not do so. Perhaps the lack of big trees was a deterrent. No other birds were seen. At present there is no evidence of breeding south of Kavirondo Gulf.

(2) IN THE NORTHERN FRONTIER.

(a) *Garissa District* (September, 1935, till August, 1936). A flock of about 50 birds "wintered" in the vicinity of the station, arriving on 13th December and leaving in March. Not seen elsewhere.

(b) *Wajir District* (July, 1939, till date of writing, March, 1940). A single bird was seen at the station on 20th October, ten on 9th November, and a flock of a hundred or so on 25th November. These remained near by, though in gradually diminishing numbers, until the time of writing. Only one bird was seen elsewhere—at the Lorian Swamp in February.

II. FIELD CHARACTERS.

Aspect when at rest.—A small, black stork with a white belly and a short, tapering bill. A white streak just above the wing-shoulder shows distinctly at certain angles. The back is white, but the dark wings, when folded, almost completely cover it. (Plate 3.)

Upper-side in flight.—Black, with the white back showing conspicuously. (Plate 1.)

Under-side in flight.—Neck, wings, and tail black; under-parts white. (Plate 2.)

Other features.—A flock circling in the air possesses a compact, columnar formation which proclaims that the birds are storks as distinct from, say, vultures. Since, however, the habit is shared by several members of the stork family, the field characters must be noted before one can identify the species.

STORKS WITH WHICH ABDIM'S MIGHT BE CONFUSED.

(a) *Black Stork (Ciconia nigra)*.—Under-side very similar to Abdim, but the back is black, not white; is also larger.

(b) *White Stork (Ciconia ciconia)*.—A much larger bird, pure white, with dark flight-feathers. (Plate 4.)

III. OBSERVATIONS ON NON-BREEDING BIRDS AT WAJIR, NORTHERN FRONTIER.

From November to March, parties of the storks could be seen most mornings and evenings around the station, or on the adjacent landing ground, busily searching for insects. They had little fear of the Somali men, and even less of the women, whom most of the large village-frequenting birds, such as Marabous and vultures, deem to be harmless. A European, however—particularly when armed with camera and field glasses—was regarded with suspicion, the storks flying off at a range of 30-40 yards. I found that easily the best way to approach them was in a car, in which one could edge up quietly until the desired bird was within ten yards or less. All the Wajir photographs were taken in this way. (The pictures of the flying birds were made at a distance of 30 feet with a Leica camera at 1/1000 second, using a long-focus 13.5 centimetre lens.) During the heat of the day, it was customary for the storks to congregate at a well, beside which there was often a large puddle left after the Somalis had watered their stock. (Plate 3.) Here the birds would sip the water, and squabble, and then sun themselves, extending their wings statuesquely so that the rays could strike to the best advantage. One individual varied the attitude by squatting on its tarsus and twisting its wings round till the under-sides were uppermost—the effect being that of a beggar soliciting alms! Among the Abdims one noted a few Marabous, towering like giants among the pygmies; a solitary White Stork (Plate 4), which must have wandered far east of its usual course of migration, and miscellaneous ravens and vultures.

IV. OBSERVATIONS ON BREEDING BIRDS IN NORTH KAVIRONDO.

The main locality in which this species breeds is thought to be the Sudan, but it is also resident in Uganda. There is no published record of nesting in Kenya, except for a note of Sir Frederick Jackson's, stating that he once saw birds carrying sticks near the Samia hills, west of Mumias ("Birds of Kenya Colony and the Uganda Protectorate," 1938, Vol. I, page 73). When I was posted to North Kavirondo in November, 1938, I decided to follow up Jackson's clue and obtain more information concerning the breeding status of this bird in Nyanza.

The primary need in an enquiry of this kind is to discover the native names. In the present case, this was not difficult, because several birds used to feed regularly on the grass behind Kakamega office, where they could be seen by all. They are called "Eviyoyo" in the Kakamega, Maragoli and Terikhi languages, and "Omenena" in Wanga and Luo. At first nobody could tell me anything about breeding, but in February I was shown a small colony near Nambare, and early in March I found a single nest in a large tree in the centre of Kakamega leper-camp, less than half a mile from the office in which I had been so busily pursuing my enquiries! Later in the month I was shown another nest near Rosterman's Mine, while near Butere there were at least twenty unoccupied nests said to have belonged to this species during the short rains.

The nest at the leper camp had small downy young on 8th March. It was a small, flat structure at the end of a horizontal branch about seventy feet above the ground. I made no attempt to climb up to it, because the tree contained a large and apparently permanent swarm of bees, which looked discouraging. The doings of the storks were of the greatest interest to the lepers, who said that the birds bred here annually; that the present pair had laid in January, and that the hatching of the eggs had been marked by a change in the feeding habits of the parents, which then began to bring mice and locusts carried intact in the bill, instead of swallowing the food at the place of capture and subsequently regurgitating it. I myself once saw a bird carrying a large dark object towards the nest—in fact, this was the clue that led me to discover it. From my own observations, however, it would appear that the normal method of feeding the young was by regurgitating the food on to the floor of the nest, and leaving them to pick it up themselves. They were fully feathered by 17th April, and looked nearly ready to fly, but I was then transferred to another district, so cannot say when this actually took place. Half a dozen pairs of Black-headed Herons (*Ardea melanocephala*) began nesting in March. They utilised the topmost branches, high above the Abdims.

Nambare is where the main Mumias-Busia road crosses the Sio river. The Abdim colony is in a large isolated tree on the south side of the river, about three miles below the bridge. The tree (Plate 5) is a prominent and rather incongruous object, alone in a wide, cultivated plain—a survival, perhaps of a long-departed forest. Though not less than 100 feet high, it gives the impression of being lower, owing to the very massive trunk. This rises for 70 feet on a distinct slant, in places as much as 45 degrees, before it branches into a canopy. A 50 foot offshoot which rises vertically from the same base serves to enhance the general effect of lop-sidedness. The native name of the tree is "Murumba," which, according to Battiscombe ("Trees and Shrubs of Kenya Colony," 1936 edition) would appear to be *Chlorophora excelsa*.

On 12th February, when I first visited the tree, there were ten nests in varying stages of incompletion, some built in the forks of the main limbs, others on the very tips of the branches that formed the canopy. To climb the tree presented a difficult problem. Once the main fork, seventy feet up, was reached, several of the nests would clearly be accessible, but between this fork and the ground the trunk was thick, and nearly branchless, and about half way up there was the inevitable bees' nest.

I had brought with me a set of tackle which has been successfully employed on other large trees (Plate 5). It consists of 400 feet of alpine rope, a pulley, a bow and arrows, and plenty of fishing line and cobbler's thread. The idea is to attach a length of thread to an arrow, which is shot over the desired fork, carrying the thread to the ground on the further side. The fishing line is fastened to the thread and hauled over the fork, and the rope pulled over by the line. To the end of the rope is attached the pulley, which has a second rope passed over the wheel, ready for use. The first rope is hauled until the pulley is hanging just below the fork, and made fast. The climber can then attach himself to one end of the rope which is passed through the pulley, and people on the ground hauling the other end can send him up to the fork without difficulty.

Although this method sounds feasible in theory, it has all sorts of snags in practice, the crucial part usually being stage one, getting the thread over the *right* branch. Too often the arrow takes it over the wrong branch, or two branches, and the thread breaks and leaves the arrow dangling far out of reach.

The Murumba tree completely defeated the method just explained—but for a reason that one would not have been likely to foresee. The arrow flew over the desired fork most satisfactorily, but the thread refused to "run" because of the peculiar flaky bark of this tree, which it got caught in. Numerous efforts

merely resulted in the loss of several arrows, most of the thread, and our tempers, so I was obliged to acknowledge defeat. It remained to be seen whether local talent could do any better. Chief Hezekiah of Buhayo said that he knew a young man named Lemberto who could climb anything, so I asked that the latter should be produced next time.

I was unable to return until 10th April, when Lemberto arrived, and proved equal to his reputation. He ascended the tree unaided, except for inserting two extremely insecure nails at the most difficult place, and he used the bees' nesting-crack as a foot-hold without encountering reprisals. He then visited all the nests. These were now only six in number—three with young and three empty, though all six pairs of birds were present. I think that a pair of Pied Crows (*Corvus albus*), which I had seen visiting the tree and being angrily chased off by a stork, may have been responsible for the three empty nests.

I decided to visit a nest myself, so Lemberto dropped down a line, and the pulley was fixed up in the manner already described. Plate 8 shows the tackle in position. The vertical rope is that passing through the pulley, while the rope slanting down to the right is the one which holds the pulley in position, passes over the bough, and is fastened to a root at ground level. The nest that I wished to visit happened to be at the end of a long horizontal bough, so I had the pulley fixed there. The bough appeared perfectly strong when tested from the ground, so I was duly hauled up to it (84 feet, measured). At close quarters, however, it was much less prepossessing, being both ancient and brittle, and creaking ominously under the combined weight of myself and Lemberto—in fact, I felt that it would not need any great encouragement to snap off at the main fork and precipitate us to the ground. Being frightened, I was not particularly inclined to make ornithological observations, but I noted that the young were newly hatched, and covered with greyish down, and that the nests were about three feet across, with very flat cups. Also I took the extremely bad photograph reproduced in Plate 5, showing a nest with a young bird crouching in the left-hand corner. After this I felt that honour was satisfied, so I fastened Lemberto to the rope and had him lowered down, following myself immediately afterwards.

EAST AFRICAN SUCCULENTS.

Part I.

By P. R. O. BALLY.

Succulents have become more and more popular with the amateur gardener during the latter years; at home they are being increasingly grown in hothouses, or, on a small scale, they adorn many a sheltered window sill. In warmer climates, where they need less protection from the severity of rain and cold, Succulents do very well in rock-gardens.

East Africa has climatic conditions which especially favour the cultivation of Succulents—except in the higher altitudes above 6,000 feet or in those rare districts with regular, heavy, rainfalls.

Many amateur gardeners take great pains to import Cacti and other Succulents from America and from South Africa; they seem to be quite unaware of the fact that East Africa possesses a wealth of beautiful indigenous Succulents which can well bear comparison with any of the imported plants.

With its modest requirements with regard to rainfall and to soil conditions, the Succulent garden is often the only patch of glorious abundance and of gay colours in the listless lull of the dry season, for Succulents will thrive where most other plants would die of starvation or of exposure.

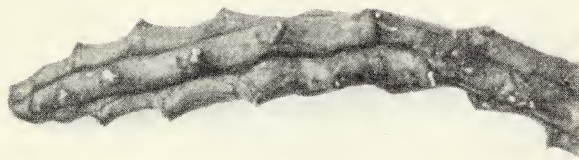
What, exactly, are Succulents? The term is used commonly without discrimination along with that of "Cacti" in order to designate all fleshy plants covered with spines. This is a mistake, for the term "Cactus" (plural "Cacti," a latinized word derived from the Greek noun "kaktos," the spiny cardoon) applies to members of one family of plants only, the CACTACEAE, most of which have indeed evolved into fleshy, leafless shapes, which are covered with clusters of spines. A few members of the Cactus family however, like the Genus *Peireskia*, do not look like true Cacti at all; they are woody, spiny, shrubs with fairly large, ordinary leaves; the expert only, who studies the anatomical character of their flower, knows that they belong to the Cactaceae.

The term "Succulents" has a much wider significance ("succulent" stands for "juicy," and it is derived from the Latin noun "succus," juice). It includes all plants which have developed a capacity for storing water in various parts of their frame, regardless of their place in the natural plant system. Thus it is correct to say that the fleshy Cacti are Succulents, but it is a mis-statement to call all Succulents: Cacti.

PLATE 6.



Notonia Gregorii
(Compositae).



Huernia aspera
(Asclepiadaceae).



Monadenium stapelioides
(Euphorbiaceae).



FIG. 1.

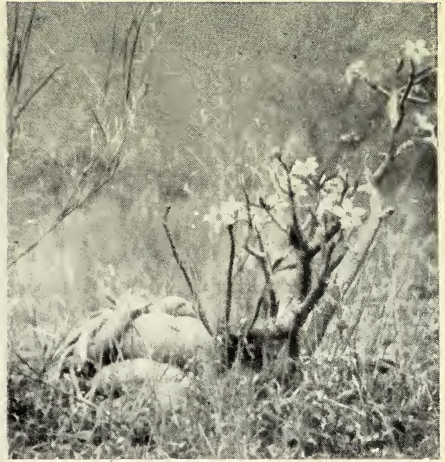


FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.

Typical representatives of succulent forms; for explanation *vide* text.

Strictly speaking, beets, potatoes, onions and all other plants with bulbous and tuberous roots should also be termed Succulents, but for practical purposes the meaning of the term has been limited to such plants as store their reserve of moisture in any part of their structure showing above ground, and which—by reason of this capacity—assume strange and bizarre shapes which set them definitely apart from the bulk of the so-called normal vegetation.

Storage of water becomes necessary where its supply is irregular or lacking for long periods, where the soil is porous or scarce, and where evaporation is high. As might be expected, Succulents are found mostly in arid districts, on rocks, in deserts, and in other localities presenting similar conditions, which are found sometimes even at high altitudes.

Most Succulents possess a comparatively weak and small root system and they are thus unable to penetrate deep down into the moisture-laden strata from which the surrounding desert vegetation may draw during the greater part of the year.

They must needs make up for this deficiency by some other quality in order to survive, and this quality is precisely the storage of water against the long periods when it is not available to them from extraneous sources. They have thus emancipated themselves to such an extent that they subsist where no subsoil water is present and where other types of vegetation will not live.

Some Succulents have developed the faculty of survival without external water supply to a point which is truly astounding. Most will live on for months, some for years. True, we are conversant with this phenomenon in the case of bulbs, tubers, even with our common potato; but these are well defined centres of growth, while with most Succulents the power to survive is inherent in all parts of the plant independently and in various degrees; a single leaf of *Bryophyllum* for instance will give rise to dozens of young plants.

At the beginning of last year I despatched a consignment of succulent *Euphorbieae*—mostly small cuttings and a few immature plants—all packed in a dry state, wrapped up in paper; although the consignment had been under way for well over two months, only four out of seventy-five died during that period.

Cuttings of a *Synadenium*—which I had left tied up in a bundle in a dry corner of the botanical room at the Museum, started to develop shoots and leaves after a period of apparent death of fully eight months, and without any visible provocation.

The most astounding example of the surviving power of a Succulent I have come across in the Berlin Museum: a seemingly dead plant of "bushman's candle" (*Sarcocaulon rigidum*,

GERANIACEAE) from South-West Africa had been kept there locked up in a drawer for an unknown period, but certainly for several years. It was then placed into a show case at the Museum, and, after having been an exhibit under glass for three further years, it started to emit young shoots. Transferred to the hot-house, the plant continued to develop normally, seemingly none the worse for its long period of apparent death. Incredible as this may seem, in the habitat of this plant periods of drought of seven years have been recorded. The "bushman's candle" with its poorly developed root system and with little facilities for absorption of the heavy dews which occur in the desert districts of South-West Africa, is thickly covered with a layer of resinous wax which is completely impermeable and which thus keeps its vital parts effectively protected against evaporation until conditions provide periods—rare and brief they are—which permit of the development of tiny leaves and of its propagatory organs.

It is a curious fact that Succulents which belong to entirely different families and which are thus by no means related, often assume an outward resemblance which makes it difficult to tell them apart.

A botanist who had travelled extensively in Mexico as well as in Eastern Africa showed me photographs which were seemingly taken in one and the same locality; only a very close inspection revealed that some of the pictures represented Mexican Cacti and others East African Euphorbieae. If the two plants did not occur in two different continents, this resemblance would have made an ideal object for the supporters of the mimicry-theory.

Such outward resemblance is more probably due to analogous climatic and geographical conditions which tend to evolve certain features best adapted to endure.

An interesting example of similarity of appearance is recorded on Plate 6, which shows a comparison of the growths of *Monadenium stapelioides* (Euphorbiaceae), *Huernia aspera* (Asclepiadaceae), and of *Notonia petraea* (Compositae). All three plants occur in the vicinity of Nairobi on the same type of rocky ground. The resemblance is confined to their outward appearance, for they are not in the least related.

In spite of the frequent outward similarity of succulents of different origin, we find much diversity of appearance among them, though always on the lines of the one dominating principle: economy in water consumption. This aim is reached mainly by reducing the surface of evaporation to a minimum, while preserving at the same time the chlorophyll-covered surfaces which are essential for maintaining metabolism. Theoretically the ideal Succulent would thus present a spherical shape.

with its surface adapted for assimilation, and this extreme development has indeed been reached by certain globular Cacti from Mexico, by the South African *Euphorbia ooesa* and by some South-West African *Mesembrianthemum*. spp.

Nature has, however, a variety of ways for achieving a similar aim, and another trend of adaptation is represented in the abovementioned "bushman's candle": here, the plant is coated impermeably and has adapted itself in such a manner that the rare emission of leaves after exceedingly long periods of rest is sufficient to safeguard continuity of life.

Other Succulents have solved their problem in other ways, and we thus find that almost every part of the plant can be modified for the storage of water. It follows that Succulents may assume a very great variety of shapes: they may be classed into the following main categories, although it is pointed out here that this is by no means a scientific classification, its only purpose being to illustrate the various forms which may be met with in East Africa. On Plate 7 a typical representative of each of these forms is shown.

Modified parts.

- (1) Trunk only.
- (2) Trunk and branches only.
- (3) Branches and leaves (the latter well developed).
- (4) Trunk and branches, while leaves are greatly reduced and deciduous. Spiny or spineless. Inflorescence fleshy. Turning woody with age.
- (5) Whole plant including inflorescence fleshy, without woody structure.

Represented on Pl. 7 by

Cissus sp.

Adenium coetaneum

Cotyledon barbeyi

Euphorbia buruana sp.

Caralluma subterranea [mss.]

Stapelia semota

Although it might be tempting to base a description of Succulents on the above external characters, it will be more satisfactory and more instructive to describe them according to the place which they hold in the natural system, i.e. in their phylogenetic order.

The families most prolific in succulent forms in East Africa are EUPHORBIACEAE and ASCLEPIADACEAE. Other families, like CRASSULACEAE and AIZOACEAE, though represented by numerous species in the South of the Continent, are known by a few species only from East Africa, while GERANIACEAE, to which the above-mentioned "bushman's candle" belongs, have not produced outstanding succulent forms in our part of the world.

On the other hand, some euphorbiaceous Genera, like *Stenadenium*, *Synadenium*, *Monadenium*, and *Dorstenia* are confined almost exclusively to Eastern Africa.

The following descriptions do not claim to include all Succulents to be found in East Africa; the flora of this country is far too imperfectly known for such an undertaking, nor has the author had access to all literature on the subject, and every year new species are discovered to increase an already great variety. This lack of completeness, however, adds rather than detracts from the charm of this interesting group, for every lover of nature has it within his reach to make discoveries of his own.

The aim of this paper is mainly to stimulate the interest in collecting and cultivating East African Succulents, and to disprove the often heard contention that they cannot bear comparison with those of other countries.

EAST AFRICAN SUCCULENTS ARRANGED IN THEIR NATURAL ORDER.

<i>Families.</i>	<i>Genera.</i>
CRASSULACEAE.	Cotyledon, Crassula, Kalanchoe, Sedum.
AIZOACEAE.	Mesembrianthemum.
PORTULACACEAE.	Portulaca, Talinum.
PASSIFLORACEAE.	Adenia.
CUCURBITACEAE.	Momordica.
CACTACEAE.	Rhipsalis.
EUPHORBIACEAE.	Euphorbia, Monadenium, Stenadenium, Synadenium.
MORACEAE.	Dorstenia.
ICACINACEAE.	Pyrenacantha.
AMPELIDACEAE.	Cissus.
APOCYNACEAE.	Adenium.
ASCLEPIADACEAE.	Caralluma, Ceropegia, Cynanchum, Duvalia, Echidnopsis, Edithcolea, Huernia, Sarcostemma, Stapelia.
COMPOSITAE.	Kleinia, Notonia, Senecio.
LABIATAE.	Aeolanthus.
LILIACEAE.	Aloe, Anthericum, Bowiea, Sansevieria.
ARACEAE.	Zamioculcas.

CRASSULACEAE. (Plate 8.)

This family is widely distributed over hot and temperate countries. The centre of its distribution is in Africa, but representatives are found also in Australia and Polynesia, a very few in South America.

In the Northern Hemisphere, including Europe, it is represented by the Genera *Sedum* and *Saxifraga*.

The Genera found in East Africa are: *Cotyledon*, *Crassula*, *Kalanchoe*, *Sedum*.

Cotyledon.

The genus is represented with over thirty species in South Africa, while only two are known from East Africa.

Cotyledon Barbeyii, Schweinf.

Has a wide distribution in East Africa, where it is endemic. It has been collected from south of Kenya Colony as far north as Erythrea. It is one of the most ornamental of East African Succulents, a vigorous shrub that may attain a height of seven feet. The erect branches bear large, fleshy, rounded leaves of a fresh green, powdered with a slight waxy bloom. The flowers rise on a slender stem in a graceful, somewhat drooping, cyme of bell-shaped flowers which range from a pale lemon-yellow to a glowing vermilion.

Plate 7 (3)—whole plant. Plate 8 (1)—flowering branch.

Cotyledon umbilicus, L.

The distribution of this species is very wide indeed; it is known to occur in Britain, in the Canary Islands, in North-Western Africa. In East Africa the plant has been found in the alpine zones above 10,000 feet of most of the higher mountains; it is a small, succulent herb, rarely over a foot in height. The small, bell-shaped, flowers are greenish-white, standing out almost horizontally from a single, sometimes branched, stem which rises from a rosette of fleshy, disc-shaped leaves with notched edges, attached to the stalks in the centre. The plant is not a truly xerophyte, but seems to prefer damp places; it is found mostly on mossy rocks near mountain streams.

Crassula.

More than two hundred species of the most varied appearance are known from Southern Africa, while the species known from East Africa are far less numerous and in most cases less showy. They are small herbs, with few exceptions more than a few inches high, with small, sometimes minute, star-shaped flowers, which grow either singly on slender stalks from the leaf-axils, or in dense clusters from a main stem.

Crassula abyssinica, A. Rich.

Is widely distributed over tropical Africa. It is one of the tallest and most robust member of the family, attaining a height of 2½ feet. The single stem, which is branched towards the top, carries a dense cluster of small, star-shaped, white or purple flowers. The fleshy leaves are lancet-shaped and minutely saw-edged. They are arranged around the stem in such a way that the larger leaves form a kind of rosette at the base becoming less numerous and smaller as they ascend the stem. (Plate 8 (2a).)

Crassula alsinoides (Hook f. Engl.).

Was first discovered in Cameroon but was found later to extend all over tropical Africa, including East Africa. It is a herb with fleshy, oblong leaves which are dotted with small maroon spots. The flowers are star-shaped, white, and somewhat fleshy, and grow singly on slender stalks, from the leaf-axils. The plant grows seldom higher than about eight inches. Very nearly related to this species are:—

Crassula coleae, Bak., which is common on rocks in Kenya Colony (Plate 8 (2b).);

Crassula galunkensis, Engl., with slightly narrower leaves;

Crassula volkensii, Engl., from Lake Dschalla in Tanganyika, a more robust species, growing to nearly a foot in height; and

Crassula nakurensis, Engl., which is found on rocks around Lake Nakuru.

Crassula crassipes, C. A. Smith.

Crassula pharnaceoides (Hochst.), Fisch. et Mey.

Crassula parvifolia, E. A. Bruce,

and related species show yet another type of appearance: the small, narrow, fleshy, leaves are arranged very closely in opposite alternating pairs, which give the branches an outward resemblance to club-mosses. None of them grow very tall; they have sometimes the appearance to miniature trees of less than a foot high and are quite ornamental in a rock-garden. The flowers are minute and not showy. On Plate 8 (2c) a *Crassula* sp. belonging to this type is shown.

Crassula erubescens, Bullock, from Mt. Elgon, growing on rocks, is a very small herb, barely two inches high, with bright scarlet foliage; it has small, single, cream-coloured flowers.

Crassula aquatica, L.

Crassula pentandra, Boyle.

Crassula Wrightiana, Bullock.

All occur in E. Africa, they are also succulent herbs, but as their habitat is mostly in swamps and bogs and in other damp places, they are outside the scope of this paper, which deals with Succulents suitable for rock gardens.

KALANCHOE.

This genus which is very rich in forms is distributed over the tropical and sub-tropical parts of Asia and Africa. It is represented by a number of very ornamental species in East Africa. They are sturdy, very succulent, herbs, sometimes attaining a height of six feet and over, growing often in clumps.

PLATE 8.



FIG. 1.

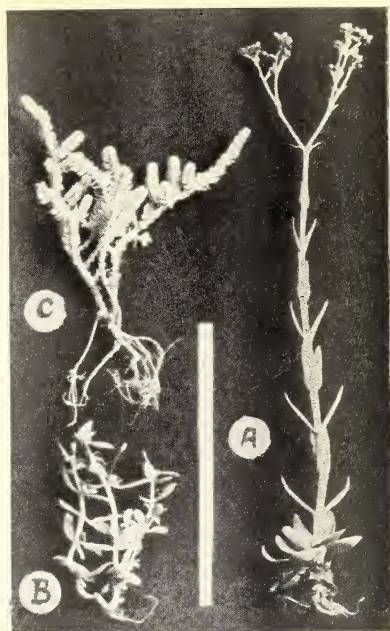


FIG. 2.



FIG. 3.



FIG. 4.

CRASSULACEAE.

The fairly large four-petalled flowers grow in dense cymes on a tall stem. Their range of colour is wide. White, cream, yellow in many shades, salmon-pink, brick-red, and scarlet-flowering species make *Kalanchoe* a desirable plant in rock gardens. Even when not in flower, the fleshy, often showily marked leaves, are very attractive.

Kalanchoe crenata, Haw.

A tall, succulent herb up to 5 feet, which is widely distributed over tropical Africa. The fleshy foliage is of a rich glossy, green, sometimes with a narrow maroon edge, the flowers primrose yellow. It is common around Nairobi and seems to prefer the light shade of forest edges and of high grass.

Kalanchoe glandulosa, Hochst.

Common in the Ngong Hills on poor rocky soil, this plant rarely attains a height of more than 16 inches. The radical leaves at the base are no more than two inches long and $\frac{3}{4}$ inch wide, and they diminish in size along the stem of the plant, which bears a cluster of primrose-coloured flowers, rising from fleshy, globular, calices which are, like the rest of the plant, covered with fine, rather sticky, hairs. (Plate 8 (3).)

Kalanchoe glaucescens, Britt.

One of the most attractive of indigenous *Kalanchoes*. It is mostly found in clusters which present a most pleasing aspect when in full bloom. The medium-sized leaves have notched edges of a deep maroon, while their green surface is covered with a bluish-green bloom. The flowering stalks rise to a height of over two feet where they form a mass of coral-red flowers. Though small in size individually, their number and bright colour, contrasting with the blue-green of the leaves, produce a very good effect. The plant is common in the Ngong Hills and on Lukenya, near Nairobi.

Kalanchoe lateritia, Engl.

Not unlike in appearance from *Kalanchoe glaucescens*, this species has smaller flowers with narrower petals, nor are the flowering heads so dense. The flowers are, however, more brilliantly coloured, a bright vermilion. It prefers low and hot districts and is found in the country extending from Kilimanjaro to the Teita Hills.

Kalanchoe Lugardii, Bullock.

A tall, apparently widely spread, *Kalanchoe*, which attains a height of over 5 feet. The flowers measure about one inch in

diameter and seem to vary much in colour, but pure white and yellow seem to be predominant. The leaves are large up to nine inches long and five inches wide, the notched margins marked with maroon. The plant has been found from Mount Elgon at 7,500 feet to Lake Rukwa in Tanganyika at various altitudes down to 4,900 feet. (Plate 8 (4).)

Kalanchoe petitiana, A. Rich.

Is very similar to *Kalanchoe crenata*, except that leaves and all green parts are quite smooth. The distribution is approximately the same.

Kalanchoe somaliensis, Baker.

The giant of East African Kalanchoes occurs quite commonly in Nairobi district on old cultivated land. It was probably introduced in Kenya by Somali cattle and horse dealers, and it is now firmly established here.

The large, pale-green leaves are mottled with maroon and they cling to the thick, sturdy stalk at its base, rather in the fashion of cabbage leaves, while higher up they are set more loosely in opposite pairs.

The flower heads are large, and so are the individual flowers, which are waxy-white and attain a diameter of $1\frac{1}{2}$ inches, their tube being two inches long.

Kalanchoe sp.

In the half-shade of shrubs and trees on the Ngong Escarpment and on Lukenya behind Athi River station occurs a *Kalanchoe* which differs from all others by its finely divided, though fleshy, leaf, which makes it an attractive plant in the rock-garden. The flowers are small and ivory-white, and they are set off very well by the brilliant emerald-green of the fleshy leaves and stalks.

SEDUM.

The Genus is but poorly represented in East Africa, and apparently confined to the higher regions.

Sedum ruwenzoriense, Baker.

A small succulent herb of decumbent habit which grows mostly epiphytically in trees or on mossy rocks. The leaves are distributed loosely all along the stem; they have the size and rounded shape of hulled rice. The flowers grow at the end of the branches in rather dense cymes. They are five-petalled stars of a brilliant golden yellow, and a plant in full bloom is a very attractive sight.

Sedum Meyeri Johannis, Engl.

from Mt. Kilimanjaro is a plant of appearance and habits very similar to the above.

This concludes the descriptive list of the Crassulaceae which are represented in the Herbarium of the Coryndon Memorial Museum, and although it is by no means a complete record of all East African species, it is hoped that it will convey to the reader a fair idea of the appearance, the habits and the distribution of this family without bothering him unduly with highly technical terms or descriptions.

(To be continued)

CORYNDON MEMORIAL MUSEUM EXPEDITION TO THE CHYULU HILLS.

VI.

COLEOPTERA. PART I.

By A. F. J. GEDYE, F.Z.S., F.R.E.S.

The present list enumerates the greater portion of the *Coleoptera* collected by the expedition. A paper on the *Curculionidae* by Sir Guy Marshall also appears in this Journal. Certain groups still remain to be dealt with notably the *Staphylinidae*, *Coccinellidae*, and certain *Clavicorn* families. Thanks are due to Sir Guy Marshall, the staffs of the Imperial Institute of Entomology, and the British Museum (Natural History) for great help in the determination of the specimens.

Climatic conditions were rather unfavourable during the period of collecting which was during and just after the long rains. There is little doubt that better results would be obtained after the short rains which normally take place in October to November. The present collection was made during May, June and July, 1938. In view of the paucity of material few remarks of value can be made regarding geographical distribution. It is gratifying to find in such a small collection a high percentage of species new to science. This is particularly so in the *Curculionidae* in which family more material was collected than in others. A very considerable number of species have proved new to the Coryndon Museum collection.

LAMELLICORNIA.⁽¹⁾

The collection made by the expedition consists of some three hundred and fifty specimens which are separable into about forty-five different species. Most of the species are common and widely distributed in Eastern Africa and it is improbable that any of the beetles discovered in any family are endemic to the Chyulu Hills. Two new species of *Aphodiinae* have been described by M. Paulian in the *Revue Zoologique et Botanique Africaine*. A few species have proved indeterminable by comparison with material in the British Museum and it is possible that some of these may prove to be new to science when opportunity occurs to compare them with material in other European collections. Owing to present world conditions it is, of course, impossible to send specimens to certain specialists.

(¹) No attempt has been made to arrange the families in a natural sequence.

The collection of coprophagous beetles was confined to searching in buffalo dung which occurred chiefly in dense forest. Thanks are due to Mr. G. J. Arrow, of the British Museum, for great assistance in the determination of the species.

Family LUCANIDAE.

1. *Xiphodontus bicolor*, Boileau.

Kilimand-Meru Exped. 7, 1909, p. 17.

Six males and seven females were taken in rotten wood at 5,200 to 5,600 ft. This very interesting species was described in 1909 from Mt. Kilimanjaro and the unique female type is in Stockholm. There is one female in the British Museum and the Coryndon Museum possesses two males from Nairobi and Embakasi. So that in spite of its apparent rarity the species may eventually prove to be widely distributed.

Family SCARABAEIDAE.

Sub-family CETONIINAE.

2. *Fornasinius fornasinii*, Bert.

Mem. Acad. Bologna IV, 1853, p. 345.

One male of this handsome beetle was captured at 6,500 ft. at the exuding sap of *Erythrina tomentosa*, R.Br. Repeated search unfortunately failed to produce further examples. Many names have been given to forms varying in colour and markings. There is only one rather damaged male in the British Museum exactly agreeing with the present specimen and this has no precise locality but was probably collected at Taveta.

3. *Eudicella bertherandi*, Fair.

Ann. Soc. ent. Fr., 1891, p. 241.

Two males were taken on *Cissus* sp. at 6,000 ft. This is a widely spread species in East Africa and is closely allied to *Eudicella smithi* var *immaculata*, Heath (of which it is probably a geographical race), but can be distinguished by the two black humeral spots on the elytra.

4. *Coelorrhina cornuta*, Heath.

Entomologist XXXVII, 1904, p. 101, fig. 2.

Three males and eighteen females taken on *Erythrina tomentosa*, R.Br., and on the wing at 5,000-6,000 ft. Widely distributed and common in East Africa east of the Rift Valley.

5. *Genyodonta flavomaculata*, F.

Ent. Syst. Suppl., 1798, p. 129.

One male at 3,800 ft. on *Erythrina tomentosa*. A not uncommon species in the Kibwezi and Taveta areas. I have no records of its occurrence at higher altitudes than 4,500 ft., and

it appears to have been mixed in some collections with *G. fissicornis*, Bourg., which takes its place at higher elevations to the north-west. *G. flavomaculata*, F., has a larger horn on the head of the male and is undivided. The black spots and marking on the thorax are separated.

The yellow markings on the elytra extend from the apex to the middle and are distinctly dentate on the basal half. The apical brown area enclosed by the yellow markings is about one-third of the length of the elytra. The body is more attenuate and tapers more to the apex than in *fissicornis*.

In *G. fissicornis* the horn on the head of the male is much smaller and distinctly divided and notched. The black markings on the thorax are confluent. The yellow markings on the elytra extend from the apical sides to two-thirds of the length of the body. The inner portion of the yellow markings is larger and more elongate and is rounded at the base and not dentate as in *flavomaculata*. The body is less attenuate and more rounded at the apex. The Coryndon Museum possesses ten specimens all from the Nairobi area.

6. **Diplognatha silicea**, McLeay.

Illus. Annul. S. Africa, 1938, p. 22.

Five specimens were taken at 5,600 ft. on *Umbelliferae*. This is the commonest *Cetoniine* beetle in Africa and extends from the Cape to Abyssinia. It becomes less common west of the Rift Valley and is gradually replaced in Uganda and further west by *D. gagates*, F. Both species are shining black in colour and superficially similar but can be easily separated by the presence in *D. gagates* of two spines on the middle of the intermediate tibiae whereas in *D. silicea* there is only one.

7. **Amaurina lunicollis**, Klb.

Sitz. Gesell. nat. Freunde Berlin, 1892, p. 66.

One specimen at 6,000 ft.

8. **Leucocelis elegans**, Kolbe.

Stett. Ent. Zeit., LVI., 1895, p. 291.

Very common and taken in large numbers at 5,200-5,600 ft., often found in *copula* on oat grass and species of *Umbelliferae*. Generally distributed in East Africa east of the Rift Valley.

9. **Gnathocera legrosi**, Janson.

Ann. Soc. Ent. Belg., XLIV, 1900, p. 465.

Very common at 5,200 ft. and often taken in *cop.* on grasses. The species of this genus are very variable but all the specimens taken on the Chyulu Hills show little variation.

Sub-family TRICHIINAE.

10. **Polyplastus ovatus**, Waterh.

Ann. Mag. Nat. Hist. (7), i, 1898, p. 261.

Twelve specimens were taken at 3,800 to 5,600 ft. Some were bred from rotten wood but the condition of the larvae unfortunately renders their description impossible. This species shows great variation in colour and markings. Common and widely distributed east of the Rift Valley. It can be taken on the flowers of *Hibiscus vitifolius*, L.

Sub-family VALGINAE.

11. **Comythovalgus fasciculatus**, Gyll.

in Schon. Syn. Ins. 1, 3, 1817, Append. p. 43.

Two specimens were taken by general sweeping at 5,200-5,400 ft. A widely distributed and common species in East Africa.

12. **Comythovalgus** sp.

One specimen of a distinct species which it has not been possible to determine by comparison with material in the British Museum and in the Congo Museum, at Tervueren.

Sub-family DYNASTINAE.

13. **Oryctes boas**, F.

Syst. Ent. 1775, p. 8.

One male specimen of the common "Rhinoceros beetle" was taken at 5,600 ft.

Sub-family RUTELINAE.

14. **Nannopopillia minuscula**, Harold.

Stett. Ent. Zeit. XL, 1879, p. 333.

Twelve specimens were collected at 5,600 ft. on *Vernonia* sp. A common species; there are specimens in the Museum collection from numerous localities east of the Rift Valley.

15. **Popillia** sp.

One specimen of an attractive species which is not represented in the British Museum collection. Owing to the war it is not possible to send the insect to the specialist on this group.

Sub-family MELOLONTHINAE.

16. **Trochalus fraterculus**, Klb.

Sitzb. Ges. Naturf. Besl. 1913, p. 202.

A very common species of "chafer" taken at light, 5,200-5,600 ft.

17. **Trochalus** sp.

18. **Pseudotrochalus** sp.

19. **Camenta** sp.

Sub-family TROGINAE.

20. **Trox luridus**, F.

Spec. Ins. II, App. 1781, p. 496.

Common at 5,200 ft. in old skins, among bones and in serval dung.

Sub-family APHODIINAE.

21. **Aphodius jeanneli**, Paulian.

Bull. Soc. Ent. Fr., 43, 1938, p. 77.

One specimen in buffalo dung at 5,600 ft.

22. **Aphodius zborniki**, Balthasar.

Acta Soc. Ent. Csl., 32, 1935, p. 68.

One specimen at 3,800 ft.

23. **Aphodius angustatus**, Klug.

Symb. Phys. V., 1845, nr. 8, t. 42, f. 8.

Two specimens at 3,800 ft.

24. **Aphodius rugulicollis**, Fr. var. **coryndoni**, Paul.

Rev. Zool. Bot. Afr., 32, 1939, p. 89.

Six specimens in buffalo dung at 5,600 ft. which Paulian has described as a new variety.

25. **Trichaphodius** sp.

One specimen at 5,600 ft. which Paulian considers a new species but is unable to describe without further material.

26. **Saprosites chyuluensis**, Paulian.

op. cit., p. 85.

Two specimens in buffalo dung at 5,600 ft. which M. Paulian has described as a new species.

Sub-family COPRINAE.

27. **Scarabaeus purpurascens**, Gerst.

Arch. Naturg. XXXVII, 1871, 1, p. 28.

One specimen of this species was collected by the "safari" at 3,800 ft. on the way to the first camp in the hills. It is unlikely to occur at higher altitudes.

28. **Scarabaeus pustulosus**, Gerst.

op. cit., p. 48.

Two specimens in buffalo dung at 5,600 ft.

29. **Helicopris pimal**, F.

Ent. Syst. Suppl., 1798, p. 29.

One female collected at light 4,000 ft.

30. **Sisyphus goryi**, Harold.

Berl. Ent. Zeit. II, 1859, p. 224.

Six specimens in buffalo dung at 5,200-5,600 ft.

31. **Sisyphus tibialis**, Raffray.
 Rev. Mag. Zool., 1877, p. 312.
 One specimen of this species, which was originally recorded from Abyssinia, was taken at 5,600 ft. in buffalo dung.
32. **Catharsius vitulus**, Boh.
 Ins. Caffr. II, 1857, p. 223.
 One male in buffalo dung at 6,000 ft.
33. **Copris mesacanthus**, Harold.
 Mitth. Munch. Ent. Ver. II, 1878, p. 45.
 One male at 5,200 ft.
34. **Copris integer**, Reiche.
 in Ferret and Galinier, Voy. Abss. III, 1847, p. 312.
 Three males and nine females were taken at 3,800-4,000 ft. either in buffalo dung or on the wing.
35. **Onitis spinicrus**, Fairm.
 Ann. Soc. Ent. Fr. LXII, 1893, p. 137.
 Five specimens at 5,600 ft. in buffalo dung.
36. **Onitis confusus**, Boh.
 Ofvers. Vet. Akad. Forh. Stockholm, XVII, 1860, p. 111:
 This species occurred commonly and twenty-eight specimens were taken at 5,600-6,000 ft. in buffalo dung.
37. **Onitis** sp. near **violaceus**, Lansb.
 Ann. Soc. Ent. Belge., XVIII, 1875, p. 51.
 One specimen at 5,600 ft.
38. **Oniticellus planatus**, Cast.
 Hist. Nat. Col. II, 1840, p. 91.
 Eight specimens at 5,600 ft. in buffalo dung. This very common species occurs throughout Africa.
39. **Onthophagus miricornis**, D'Orb.
 Ann. Soc. Ent. Fr. LXXI, 1902, p. 139.
 Five males were taken in buffalo dung at 5,600 ft. This is an interesting species in which two forms of male occur both horned and hornless.
40. **Onthophagus triarmatus**, D'Orb.
 Ann. Mus. Civ. Genova XLI, 1904, p. 320.
 Six males and thirteen females in buffalo dung at 5,200 ft. The Museum collection previously contained only three specimens from Nairobi but as the species was originally described from Abyssinia it will no doubt prove to be widely distributed.

41. **Onthophagus raffrayi**, Har.
Berl. Ent. Zeit. XXX, 1886, p. 144.
Three males and one female in buffalo dung at 5,200-5,600 ft.
42. **Onthophagus parcepictus**, D'Orb.
Ann. Soc. Ent. Fr. LXXVII, 1908, p. 132.
Twenty-eight specimens in buffalo dung at 5,200-5,600 ft.
This species was not previously represented in the Coryndon Museum.
43. **Onthophagus quadricuspis**, D'Orb.
Ann. Soc. Ent. Fr. LXXVII, 1908, p. 125.
Two males and one female at 5,200-5,600 ft. in buffalo dung.
A common and widely distributed species in East Africa.
- 44, 45, 46. **Onthophagus** ssp.
The determination of these specimens awaits further material.

LONGICORNIA.

The *Longicorn* beetles collected by the expedition number some ninety-six specimens and are divisible into fourteen species. The more difficult species have been submitted to Dr. Breuning and he has described three as new. Such a high proportion of new species in such a small collection only shows what might be expected from the Chyulu Hills as a result of further collecting at a more favourable time. Little collecting for Coleoptera was done in the large forest at the highest elevation of the range and there undoubtedly many interesting insects await discovery. No *Prioninae* were represented in the collection but there is little doubt that the commoner species of *Macrotoma* and *Acanthophorus* would be found to occur at the lower altitudes.

Family CERAMBYCIDAE.

Sub-family CERAMBYCINAE.

47. **Oemida gahani**, Dist.
Four specimens at 5,600 ft. A common and widely spread species throughout East Africa.
48. **Carinoclytus thomsoni**, Har.
One specimen at 5,600 ft. Very common at Kibwezi.
49. **Caloclytus carinatus**, Aur.
Fifteen specimens collected in rotten wood at 5,600 ft. Not uncommon in the Nairobi area.

Sub-family LAMIINAE.

50. **Phymatogyrus pulcher**, Breuning.
Three specimens at 5,400-5,600 ft. This has been described as a new species by Dr. Breuning.

51. **Monoxenus balteatus**, Aur.
Twelve specimens at 5,500-5,600 ft.
52. **Mecynome puncticollis**, Breuning.
This was the most abundant species collected and forty-eight specimens were taken at 5,600-6,000 ft.
53. **Batrochorhina approximata**, Breuning.
One specimen described as new by Breuning taken at 5,600 ft.
54. **Sternotomis bohemanni**, Chev.
Two specimens at 5,600 ft. This handsome beetle occurs commonly in East Africa east of the Rift Valley and breeds in fig trees.
55. **Entebbia bipunctata**, Gah.
Two specimens at 5,600 ft. Not uncommon and widely distributed in East Africa.
56. **Gymatura spumans**, Guer.
One specimen at 5,500 ft. New to the Museum collection.
57. **Pterolophia mediopicta**, Breuning.
One specimen at 5,600 ft. This has been described as new by Breuning.
58. **Sophronica grisea**, Aur.
One specimen at 5,600 ft. Widely distributed.
59. **Sophronica rufescens**, Breuning.
Five specimens at 5,600 ft.
60. **Corus lignarius**, Guer.
One specimen at 5,600 ft.

Family CARABIDAE.

One hundred and thirty-eight specimens of *Carabidae* were collected which are separable into some twenty-five species. Most of these have been identified by Mr. E. B. Britton, of the British Museum. A considerable proportion of the species are represented by unique specimens and in several cases owing to the lack of material it has not been possible to determine them other than generically. Here again there is no doubt that further collecting will produce many more interesting species. The time of year must have been particularly unfavourable for *Carabidae* as only two species, *Polyaulacus kilimanus*, All., and *Demetrias natalensis*, Chd., were found in any abundance. No *Cicendelidae* were collected by the expedition.

61. **Psecadius eustalactus**, Gerst.

Eight specimens at 5,200-5,600 ft. The Museum possesses a large series of this striking beetle from various localities east of the Rift Valley.

62. **Agonum alacer**, Bch.
One specimen at 5,200 ft.
63. **Agonum** sp.
64. **Euleptus elegans**, Per.
One specimen at 5,600 feet.
65. **Chlaenius pulchellus**, Boh.
One specimen at 3,800 ft. The Museum previously possessed only one specimen from Mombasa.
66. **Anisodactylus** sp.
67. **Aulacoryssus aciculatus**, Dej.
One specimen at 3,800 ft.
68. **Hypharpalus interstitialis**, Boh.
One specimen at 5,600 feet.
69. **Hypharpalus escheri**, Dej.
One specimen at 3,800 ft. Common and widely distributed.
70. **Acupalpus** sp.
One specimen at 5,600 ft.
71. **Amorphomerus opacus**, Raff.
One specimen at 2,800 ft.
72. **Aephnidius madagascariensis**, Chd.
One specimen at 5,600 feet.
73. **Lebia evecta**, Per.
One specimen at 5,600 ft. Common and widely distributed.
74. **Lebia** sp.
75. **Phlaeozetus** sp.
Three undetermined species of this genus were found in the collection.
76. **Thyreopterus flavosignatus**, Dej.
Two specimens at 3,800 ft.
77. **Demetrias natalensis**, Chd.
Twenty-three specimens were taken at 5,200-5,600 ft. under bark.
78. **Dromius fuscus**, Per.
Two specimens at 5,600 ft.
79. **Polyaulacus kilimanus**, All.
This was the commonest *Carabid* collected and eighty specimens were taken at 5,600 ft. This species was originally described by Alluaud from Kilimanjaro.

80. **Hystrichopus similis**, Per.
Four specimens at 5,600 ft.
81. **Drypta** sp.
82. **Triaeogenius sculpturalis**, Gerst.
One specimen at 2,800 ft.

Family *BOSTRYCHIDAE*.

83. **Bostrychoplites cornutus**, Ol.
One specimen of this common "borer" at 3,800 ft.
84. **Enneadesmus forficula**, Frm.
Two specimens respectively at 3,800 and 5,600 ft.
85. **Xylion adustus**, Fhs.
Three specimens at 5,600 ft. Common and widely distributed in East Africa.

Family *ANOBIIDAE*.

86. **Ptilinus** sp.
One specimen not represented in the British Museum.

Family *CLERIDAE*.

87. **Gyponyx** sp. near **weisi**, Hintz.
Six specimens at 5,200-5,600 ft. This species was not previously represented in the Museum collection.
88. **Cephaloclerus** sp.
Two specimens at 5,600 ft.
89. **Necrobia rufipes**, De Geer.
Four specimens. Common in old drying carcasses throughout East Africa.

Family *MALACHIIDAE*.

90. **Hedybius bicornutus**, Champ.
Eleven specimens at 5,200-5,600 ft. Fairly common east of the Rift Valley.
91. **Hapalochrus sumtuosus**, Boh.
Six specimens at 3,800 ft.
92. **Hapalochrus amplipennis**, Har.
Very common in all parts of the hills. Widely distributed in East Africa.
93. **Hapalochrus semilaevis**, Champ.
Very common at all elevations.

Family *DRILIDAE*.

94. **Selasia rhipiceroides**, Cast.
Three specimens at 3,800 ft.

Family PRIONOCERIDAE.

95. **Idgia bipartita**, Gerst.
One specimen at 3,800 ft. Common and widely distributed.
96. **Idgia dimidiata** var. **tripartita**, Pic.
Common at all elevations.

Family CANTHARIDAE.

97. **Cantharis puberulus**, Chp.
One specimen at 5,600 ft. Common over a great part of East Africa.

Family LYCIDAE.

98. **Lycus trabeatus**, Guer.
One specimen at 3,500 ft.
99. **Lycus ampliatus**, Fhs.
Nine specimens. Widely spread over the hills and most of East Africa.
100. **Lycus flammeatus**, Bourg.
Sixteen specimens. Common at all elevations.
101. **Cautires lamellatus**, Kln.
Nine specimens at 5,600 ft.
102. **Cautires pentagonus**, Kln.
Four specimens at 5,600 ft.

Family BUPRESTIDAE.

103. **Steraspis fastuosa**, Gerst.
Three specimens at 2,500 ft. This handsome insect is not uncommon on the plains.
104. **Sphenoptera maculipennis**, C. & G.
One specimen at 5,200 ft.
105. **Sphenoptera neglecta**, Kl.
One specimen at 5,200 ft.
106. **Anthaxia pilifrons**, Kerr.
One specimen at 2,500 ft.
107. **Anthaxia** sp. n.
One specimen of a new species which will be shortly described by Thèry.⁽¹⁾
108. **Damarsila albomarginata**, Hbst.
Three specimens at 5,600 ft. Common and widely distributed in East Africa.

⁽¹⁾ Since the above was written I have received Mon. Thèry's MS in which this insect is described as *Anthaxia chyuluensis*, n. sp. This paper will appear in a future issue of this Journal.

109. **Damarsila amaurotica stuhlmanni**, Klb.

One specimen at 5,200 ft. Previously the Museum possessed only one specimen from Moshi.

110. **Acmaeodera subprasina**, Mars.

One specimen at 5,200 ft.

111. **Meliboeus albopilosus**, Kerr.

One specimen at 5,200 ft.

112. **Meliboeus albopilosus** var. **montanus**, Kerr.

One specimen at 5,200 ft.

Family *ELATERIDAE*.

The Museum expedition collected a large number of individuals of this family although they are not separable into many different species. They have been determined by Monsieur E. Fleutiaux, the recognised authority on the group, who has already contributed a valuable paper to this journal (Vol. XII (53-54), 1935, p. 90). In this paper were described no less than fifty-five new species and two new genera from the Museum collection. There is no doubt that careful collecting will produce many more new forms from East Africa.

113. **Adelocera kenyensis**, Fleut.

Twenty specimens were collected at 5,600 ft. Prior to this the Museum possessed only one specimen from the Kikuyu Escarpment so that the species will probably prove to be widely distributed.

114. **Propsephus maculatus**, Schw.

One hundred and twenty specimens were collected at 5,600 ft., the Museum previously possessing only two specimens from the Aberdare Mountains.

115. **Anchastus** sp. near **parvicollis**, Fleut.

One specimen at 5,600 feet.

116. **Cardiophorus subdentatus**, Schw.

Thirty-three specimens at 5,200-5,600 ft. Common and widely distributed in East Africa.

117. **Cardiophorus** sp. near **chappuisi**, Fleut.

One specimen at 5,600 ft.

118. **Cardiophorus usambaricus**, Fleut.

One specimen at 5,600 ft.

119. **Cardiophorus** sp. near **frontalis**, Fleut.

Two specimens at 5,600 ft.

120. **Elasmosomus** sp. near **mocquerysi**, Fleut.

One specimen at 5,600 ft.

Family *TENEBRIONIDAE*.

Only some twenty odd species of this family were collected by the expedition and these have been kindly determined by Dr. K. G. Blair, of the British Museum. It is unfortunate that although several species were found in considerable abundance it has only been possible to identify them generically.

121. *Zophosis* sp.

122. *Rhytinota ventricosa*, Gerst.

One specimen at 6,000 ft. A common species of the surrounding plains.

123. *Rhytinota gracilis*, Gerst.

Two specimens at 5,600 ft. A common and widely distributed species.

124. *Adesmia (Macropoda) baccata*, Gerst.

Two specimens at 2,500 ft. Widely distributed.

125. *Phrynocolus crispatus*, Fairm.

Twenty-six specimens at 5,600 ft.

126. *Phrynocolus auriculatus*, Geb.

Two specimens at 5,600 ft. These are much smaller in size than a fair series possessed by the Museum from North Kavirondo.

127. *Phrynocolus frondosus*, Gerst.

One specimen at 3,800 ft. A common insect of the plains.

128. *Psammodes* sp.

129. *Sepidium muscosum*, Gerst.

Sixteen specimens at 3,800 ft. to 5,200 ft. Common and widely distributed in East Africa.

130. *Gonocephalum simplex*, F.

Abundant throughout East Africa.

131. *Mesomorphus murinus*, Bdi.

Two specimens from 3,800 ft. Previously the Museum had only one specimen from Lake Jipe.

132. *Hypophloeus ? abyssinicus*, Pic.

Four specimens at 5,600 ft.

133. *Gnathocerus cornutus*, F.

One specimen at 5,200 ft. A cosmopolitan insect.

134. *Derosphaerus granipennis*, Geb.

Three specimens at 5,600 ft. New to the Museum.

135. *Lyprops badius*, Geb.

One specimen at 3,800 ft.

136. **Dichastops sunaeneus**, Geb.

One specimen at 3,800 ft. This species is new to the Museum collection and bears a curious resemblance to a *Lagriid*.

137. **Micrantereus femoratus**, Gerst.

Two specimens at 5,200 ft. New to the Museum collection.

138. **Hoplonyx** sp. near **brevicollis**, Geb.

Three specimens at 5,600 ft.

139. **Paramarygmus metallicus**, Fairm.

Two specimens at 5,600 ft. New to the Museum collection.

140. **Praogena** sp.

Three specimens at 5,600 ft.

141. **Pycna** sp.

Twenty-eight specimens at 5,600 ft.

142. **Hypamarygmus** sp.

Forty-two specimens at 5,600 ft.

Family *CISTELIDAE*.

A large number of specimens of this family were collected and have been determined by Herr Borchmann. They are of great interest and no less than six named species are new to the collection. They were captured by sweeping grasses on the edge of forest. A large *Allecula* and several small species of other genera still remain to be identified.

143. **Ectenostoma oberudorferi**, Borch.

One specimen at 5,600 ft.

144. **Ectenostoma dilatipes**, Borch.

Sixteen specimens at 5,600 ft.

145. **Ectenostoma atrum**, Borch.

Twenty-four specimens at 5,600 ft.

146. **Isomira 8-lineata**, Borch.

Twenty-five specimens at 5,000-5,600 ft. Some were attacked by mites while living.

147. **Isomira vagilineata**, Borch.

Twenty-three specimens at 5,400-5,600 ft.

148. **Mycetocharina suturalis**, Borch.

One specimen at 5,600 ft.

Family *SCRAPTIIDAE*.

149. **Biophida** sp.

Two specimens at 5,600 ft.

Family *RHIPIPHORIDAE*.

150. **Macrosiagon bipunctatum**, F.

One specimen at 5,200 ft. Widely distributed.

151. **Rhipiphorus ? caffer**, Gerst.

One specimen at 5,500 ft. This insect has very short, almost vestigial elytra, and with its vivid yellow abdomen bears a remarkable resemblance to a *Hymenopteron*.

Family *LAGRIIDAE*.

The specimens have been determined by Borchmann.

152. **Lagria villosa**, F.

Eight specimens at 5,600 ft. Common and widely distributed throughout East Africa and Uganda.

153. **Derolagria convexa**, Klb.

Twenty-one specimens at 5,600 ft. Common and widely distributed.

154. **Chrysolagria plebeja**, Gerst.

Two specimens at 5,400 ft. A common coastal form.

155. **Chrysolagria flavipennis**, Fhs.

Five specimens at 5,600 ft. New to the Museum collection.

156. **Chrysolagria antennalis**, Borch.

Fifteen specimens at 5,400-5,600 ft. New to the Museum.

157. **Chrysolagria cuprina**, Ths.

Forty-seven specimens at 5,200-5,600 ft. This was very abundant on the hills but is new to the Museum collection.

Family *MELOIDAE*.

The members of this family are of particular interest on account of the hyper-metamorphosis which they undergo. A different type of larva developing at each instar of the same species. The adults deposit their eggs in the ground. In some cases the young larvae climb on to flowers where they attach themselves to bees or other insects and are borne to the nest where they pass the rest of their larval life. In the case of the genus *Horia* it is known that the larvae actually pupate in the burrows of *Xylocopa* bees. All the adult members of the family are phytophagous. Apart from *Horia* I know of no life history which has been worked out in other African genera. I have found *Mylabris praestans* in the act of laying and have been successful in rearing young larvae but have been unable to keep them alive owing to ignorance of their food. Some larvae are believed to be parasitic in the egg masses of certain grass hoppers (*Acrididae*).

158. **Mylabris merefiensis**, Pic.

One specimen at 5,600 ft. New to the Museum collection.

159. **Mylabris praestans**, Gerst.
One specimen at 5,200 ft. Common on the plains from Nairobi to the Coast.
160. **Mylabris bipartita**, Mars.
Four specimens at 3,800 ft. Very common and widely distributed.
161. **Eletica rugiceps**, Ancey.
One specimen at 5,200 ft.
162. **Epicauta albovittata**, Gestro.
One specimen at 5,500 ft. Common at the coast.
163. **Nemognatha angolensis**, Har.
One specimen at 5,200 ft. Widely distributed.
164. **Coryna apicicornis**, Guer.
Sixteen specimens at 3,800-5,600 ft. Very common and widely spread.
165. **Coryna 12-punctata**, Chev.
One specimen at 5,600 ft.

Family *ANTHICIDAE*.

166. **Anthicus bottergei**, Pic.
Two specimens at 5,600 ft.
167. **Notoxus jeanneli**, Pic.
One specimen at 5,600 ft. Widely distributed.

Family *BRUCHIDAE*.

168. **Spermophagus bimaculatus**, Pic.
Four specimens at 5,600-6,600 ft. Widely distributed.
169. **Spermophagus cicatricosus**, Gyll.
One specimen 5,600 ft.
170. **Spermophagus ? maurus**, Fhs.
Five specimens 5,600 ft. New to the Museum collection.
171. **Spermophagus natalensis**, Fhs.
Two specimens 5,200 ft.
172. **Bruchus obscurus**, Fhs.
Eight specimens 5,400-5,600 ft.
173. **Bruchus ornatus**, Boh.
One specimen 5,400 ft.
174. **Bruchus atosuturalis**, Pic.
One specimen 5,200 ft. New to the Museum collection.

175. **Bruchus subcallosus**, Pic.
One specimen at 5,600 ft. New to the Museum collection.
176. **Bruchus chinensis**, L.
Two specimens at 5,300 ft. New to the Museum collection.
177. **Bruchus ? uberatus**, Fhs.
Two specimens at 5,200-5,600 ft. New to the Museum collection.
178. **Bruchus rhodesianus**, Pic.
Three specimens at 5,200-5,600 ft.
179. **Bruchus flabellicornis**, Boh.
Two specimens 5,400-5,600 ft. New to the Museum collection.
180. **Bruchus obtectus**, Say.
Six specimens at 5,600 ft. New to the Museum collection.
181. **Pachymerus atricolor**, Pic.
One specimen at 5,600 ft. New to the Museum collection.

Family CHRYSOMELIDAE.

Several hundred specimens of this family were collected which are separable into at least fifty species. Mr. G. E. Bryant has been kind enough to determine a number of the species but it is unfortunate that it has only been possible to affix a generic name to a considerable number. Many of the species are not represented in the British Museum and undoubtedly a number of them will prove to be new to science.

Sub-family ORSODACNINAE.

Two species of *Zeugophora* were collected but they have not yet been determined specifically.

Sub-family CRIOCERINAE.

182. **Bradylema robusta**, Lac.
Three specimens at 5,400 ft. This species is widely distributed, the Museum already possessing specimens from Kaimosi.
183. **Lema regimbarti**, Gest.
Two specimens at 5,200 ft. Widely distributed throughout East Africa.

Sub-family CLYTRINAE.

Several species of *Melitonoma* and *Gynandrophthalma* were collected in large numbers, but it has not yet been possible to determine them.

Sub-family CRYPTOCEPHALINAE.

184. **Cryptocephalus decemnotatus**, Suff., var.
Nineteen specimens at 5,200-5,600 ft. Common and widely distributed.
185. **Cryptocephalus** sp.

Sub-family EUMOLPINAE.

186. **Europe sauberlichi**, Wse.
Three specimens at 3,800 ft. New to the Museum collection.
187. **Macrocoma fulvohirta**, Gest.
Two specimens at 5,400 ft.
188. **Macrocoma aurivillosa**, Marsh.
One specimen at 5,600 ft. Common and widely distributed.
189. **Colasposoma** sp.
190. **Pseudocolaspis** sp.
191. **Pagria** sp.
192. **Lefevrea** spp.
Several unknown species of this genus were taken in large numbers.

Sub-family GALERUCINAE.

193. **Gastrida abdominalis**, Chap.
Nine specimens at 5,600 ft. Common and widely distributed.
194. **Hyperacantha inaequalis**, Chap.
One specimen at 5,600 ft.
195. **Hyperacantha semipalliata**, F.
One specimen at 5,600 ft.
196. **Hyperacantha complexa**, Lab.
Twenty-four specimens at 5,200-5,600 ft. It is probable that this species and *H. semipalliata* and *H. inaequalis* are all forms of one species. *H. complexa* is certainly the dominant form on the Chyulu Hills as only one specimen of each of the other forms was taken. *H. complexa* is a distinctive looking insect and is also the dominant form on the Teita Hills and on Mt. Mbololo, and we have not seen specimens from elsewhere. *H. inaequalis* seems to be generally distributed while *H. semipalliata* is the common form in the Nairobi area and adjacent country.
197. **Monolepta lusingaensis**, Lab.
Seventy specimens at 5,200-5,600 ft. Widely distributed, also occurring in the Nairobi area.

198. **Monolepta leuce**, Wse.
Fifty-six specimens at 5,200-5,600 ft. Common and widely distributed.
199. **Monolepta rubricosa**, Gerst.
Five specimens at 5,600 ft.
200. **Monolepta** spp.
Some five different species still undetermined specifically.
201. **Platyxantha** sp.
202. **Rhaphidopalpa africana**, Wse.
One specimen at 5,600 ft. A common coastal form.
203. **Copa kunowi**, Wse.
One specimen at 5,600 ft. Common and widely distributed.
204. **Mahutia** sp.
205. **Hemixantha usambarica**, Wse.
Four specimens at 5,200-6,000 ft.
206. **Hemiphracta** sp.

Sub-family HALTICINAE.

207. **Hespera cinctella**, Wse.
One specimen at 5,600 ft.
208. **Decaria abdominalis**, Jac.
One specimen at 6,600 ft.
209. **Philopona tibialis**, Wse.
Five specimens at 5,200-5,600 ft. Common and widely distributed.
210. **Philopona** sp.
211. **Podagrica puncticollis**, Wse.
Four specimens at 5,400 ft. Common and widely distributed.
212. **Crepidodera** sp.
213. **Haltica pyritosa**, Er.
Eighteen specimens at 5,600 ft. Very common and widely distributed in East Africa near rivers and streams.
214. **Longitarsus** sp.
215. **Aphthona** sp.

Sub-family HISPINAE.

216. **Dichirispia mashuna**, Per.
Seven specimens at 5,600 ft. A widely spread species originally described from Rhodesia.

217. **Dichirispa auromicans**, Gest.
Fifteen specimens at 5,200-5,600 ft. Widely distributed.
218. **Dactylispa contribulis**, Wse.
Fifty-eight specimens at 5,200-5,600 ft. Widely distributed.
219. **Dactylispa** sp.
220. **Dactylispa gracilis**, Per.
Seven specimens at 5,600 ft. New to the Museum collection.
221. **Hispa fraterna**, Per.
Twenty-two specimens at 5,600 ft. New to the collection.
222. **Hispa gracilicornis**, Wse.
Two specimens at 5,600 ft. New to the collection.
223. **Oncocephala** sp.
Five specimens at 5,600 ft.

Sub-family CASSIDINAE.

224. **Aspidomorpha infuscata**, Spth.
Four specimens at 5,600 ft. Widely distributed.
225. **Aspidomorpha lateralis**, Wse.
Two specimens at 5,600 ft. Widely distributed.
226. **Aspidomorpha quadrimaculata**, Ol.
One specimen at 5,000 ft. Common and widely distributed.
227. **Laccoptera montivaga**, Spth.
Five specimens at 5,600 ft. Common and widely distributed.
228. **Cassida magilensis**, Spth.
One specimen at 5,400 ft. New to the Museum collection.
229. **Acrocassis soror**, Wse.
Two specimens at 5,600 ft. Common and widely distributed.

CORYNDON MEMORIAL MUSEUM EXPEDITION TO
THE CHYULU HILLS.

VII.

THE WEEVILS (COL. CURCULIONIDAE) OF THE CHYULU
HILLS, KENYA. COLEOPTERA. PART 2.

By SIR GUY A. K. MARSHALL, C.M.G., F.R.S.

The expedition organised by the Coryndon Memorial Museum for the investigation of the fauna and flora of the Chyulu Range succeeded in securing some 1,130 specimens of beetles of the family *Curculionidae*, which Dr. V. G. L. van Someren has kindly entrusted to me for study.

Such attempts to elucidate the faunas of isolated ranges are undoubtedly of considerable scientific value, even though the present material cannot be regarded as fully representative of the area explored, because the collecting was carried out during less than four months and at a season when insects were probably not at their greatest abundance. Nevertheless several interesting points emerge from it, even though deductions regarding the distribution of the species must at present remain purely tentative, because it is doubtful whether we yet know more than about 10 per cent. of the weevils that occur in Kenya.

The collection comprised 104 species, of which 43 were previously known, while 29 are here described as new, and 32 remain unidentified, these being represented by only single specimens or by material that was otherwise inadequate. Probably some 25 of the undetermined species will prove to be undescribed, so that over half the species may be regarded as new to science.

An interesting point is the occurrence of various genera which in other parts of East Africa have been regarded as entirely alpine or subalpine, not occurring below 7,000 to 8,000 feet; yet in the Chyulus they have been found at so comparatively low an altitude as 5,600 feet. These genera are: *Ischnobrotus*, *Subleptospyrus*, *Parasystates*, and *Pseudomesites*.

It was anticipated that the fauna of the Chyulus might show a somewhat intermediate relationship between that of the highlands to the north-east and that of the Kilimanjaro range to the south-west, which is stated to be only 45 miles distant as the crow flies; and it is understood that such an intermediate character has been found in certain other groups. But this certainly does not yet appear to be the case in the *Curculionidae*.

From Kilimanjaro and Meru Aurivillius recorded 89 named species (collected by Professor Sjöstedt), to which Hustache subsequently added another 33 (collected by Messrs. Alluaud and Jeannel), making 122 in all, many having been taken at low alti-

tudes. As noted above, 72 named species are now recorded from the Chyulus. Yet only eight species are common to the two lists, and of these no less than seven are widely distributed in East Africa and have no bearing on the question. Thus there is at present only one species (*Isoramphus acalloides*, Hust.) that is known only from Kilimanjaro and the Chyulus; and this is a wingless insect, the habits of which have not been recorded.

Dr. van Someren has also recently sent me a small lot of weevils from the Teita Hills for comparison, but this contained very few of the smaller species. With this and other records a list of 54 known species has been compiled and I have some 12 others which are probably new. Of these 66, only four species have been found in the Chyulus, and three of them are widespread insects. But the difference in the two faunas is even more strongly brought out by the fact that in the comparatively short Teita list there are no less than 21 genera not yet recorded from the Chyulus.

It is possible that some indication of the affinities of the Chyulu fauna may be gathered by an examination of the distribution in other parts of Kenya of any of the new species. The results are as follows:—

Teita Hills: one species, *Apotmetus vansomereni* (wingless).

Nairobi: two species, *Mitophorus largus* (wingless) and *Apion stichochaetis*; these will probably prove to be rather widely distributed.

Chania Falls, Thika (alt. about 4,500 ft.): five species, *Cado-derus lepidus*, *Ischnobrotus gedyei*, *Mitophorus largus*, *Endaeus sublucidus* and *Cossonus fossatirostris* (only the first three wingless).

These figures suggest that the volcanic Chyulu Range has possibly been colonised from the highlands to the north-west, rather than from the ranges lying alongside of it.

The topography of the area has already been fully discussed by Dr. van Someren in this Journal (Vol. XIV, pp. 1-14).

The types of the new species are being deposited in the British Museum, and cotypes will be found in the Coryndon Memorial Museum, Nairobi.

Family CURCULIONIDAE.

Subfamily BRACHYDERINAE.

Blosyrus rugulosus, Aur.

Three examples, June-July, 5,600 feet. Occurs fairly widely in Kenya, extending into Abyssinia.

Dereodus vagabundus, Fst.

One example, June, 2,500 feet. Widely distributed throughout East and South Africa.

Tapinomorphus humerosus, sp. n. (Plate 1, fig. 3.)

♂ ♀. Derm piceous, shiny, with minute grey or yellowish scales with a coppery reflection which are isolated and rather unevenly distributed; pronotum usually with three very indefinite narrow stripes of denser scales, the median one often obsolescent; elytra with an indefinite irregular common curved band across the top of the declivity; underside shiny, with sparse short recumbent setae.

Head rugulose, with fairly dense scaling and a deep frontal sulcus; eyes moderately convex. Rostrum stout, a little longer than broad, almost parallel-sided, the genae being only slightly dilated; the dorsal area flat, rugulose, with three fine inconspicuous carinae, sometimes hidden by scales, some of which are often green; the interantennal area not declivous, the epistome undefined. Antennae ferruginous, with the club fuscous; scape abruptly clavate, without scaling but with short erect setae, funicle with joint 1 longer than 2, 4-7 moniliform. Prothorax transverse (6: 8.5) strongly rounded laterally, widest at the middle, the base gently arcuate; the dorsum almost flat longitudinally in the middle, closely set with large deep punctures that are largely concealed by scaling, with a shallow transverse impression on each side near the apex. Elytra of ♂ rotund, as broad as long, widest at one-fourth from the base and there strongly rounded owing to a broad subhumeral dilatation, thence narrowing rapidly, and broadly rounded behind, the base subtruncate; the dorsal outline gradually rising from the base to beyond the middle, then sloping steeply backwards and almost vertical at the apex; the broad striae with large deep close round punctures, which diminish behind; intervals scarcely broader than the striae and slightly convex, interval 1 with a row of small granules on the basal fourth, 3 usually somewhat raised at the base and with an obtuse squamose tubercle at the top of the declivity; the scales small and elongate, the short curved setae inconspicuous on the disc, more erect behind; elytra of ♀ more subquadrate (7:6), being almost parallel-sided in the middle, the humeral dilatation reduced to an obtuse lateral angulation usually visible from above, the tubercle on interval 3 much reduced or obsolete, intervals 3 and 6 somewhat elevated at the base. Legs rather slender, piceous, with the apex of the tibiae and the tarsi testaceous; femora with sparse narrow scales having a metallic reflection and recumbent setae.

Length 2.4—3.0, breadth 1.5—1.9 mm.

Alt. 5,200 ft., 17 ♂ 23 ♀, iv-v. 1938; 5,600 ft., 43♂ 57♀, iv, vi, vii, 1938.

Of the two previously described species, *T. setosus* and *metallicus*, Hartm., 1904, occurring in Tanganyika, the male of

the former differs from the present species *inter alia* in having no posterior tubercles on the elytra and the subhumeral dilatation is angulate instead of broadly rounded, while the pronotum is remotely punctate and the two basal joints of the funicle are equal; in the female the subhumeral angulation does not project laterally.

T. metallicus is clothed with metallic red or green scaling, and the elytra bear a slight obtuse elevation behind the middle on interval 6 only in the male, and on 5 and 6 in the female.

Tapinomorphus socors, sp. n.

♀. Derm piceous, shiny, with dense uniform grey or brownish scaling, which entirely conceals the integument except the striae on the elytra.

Allied to *T. humerosus* but a good deal smaller; agreeing with the description of that species except in the following particulars: *Prothorax* rather more transverse, more strongly rounded laterally, widest well behind the middle, more deeply constricted at the apex, strongly arcuate at the base, with the basal angles entirely rounded off. *Elytra* broadly oval, with the sides moderately and regularly rounded, deeply sinuate at the base, more broadly rounded at the apex, the subhumeral angulation obtuse, not projecting laterally and quite invisible from above; the intervals broader than the striae and of equal width, 3 and 6 not raised at the base, and without any trace of posterior tubercles; the raised spatulate setae paler and rather more conspicuous.

Length 2.0—2.6 mm., breadth 1.2—1.5 mm.

Alt. 5,200 ft., 2 ♀, iv, 1938; 5,400 ft., 3 ♀, iv-v, 1938; 5,600 ft., 4 ♀, iv, vi, 1938.

The females of *T. setosus* and *metallicus*, Hartm., differ in having the prothorax much narrower and widest at the middle; in the former the alternate intervals of the elytra are wider, and the latter has posterior elevations on intervals 5 and 6.

Subfamily OTIORRHYNCHINAE.

Cadoderus lepidus, sp. n. (Plate 1, fig. 1.)

♂. ♀. Derm piceous, entirely concealed by dense scaling; head and rostrum light brown, often with a narrow median dark stripe; prothorax broadly dark brown on the disc, with a narrow median light brown stripe, light brown laterally, with a dark brown dorso-lateral stripe and another on the pleurae, and a few green scales in the basal angles; elytra dark brown dorsally, with the suture light brown throughout, interval 2 pale on the declivity (sometimes with a few green scales), intervals 3-6 with metallic green (sometimes coppery) scaling at the base and a short stripe on the declivity, that on 3 being the longest, 7 green

throughout, 8 greenish on the basal half and dark brown behind, 9 light brown throughout, 10 dark but becoming pale at the apex.

Head with scales concave and a row of erect spatulate setae by each eye; forehead twice as broad as an eye, with a median stria; eyes prominent, highest behind the middle. *Rostrum* longer than broad, parallel-sided in the basal half, somewhat roundly dilated at the genae; the dorsal area almost parallel-sided; flat, with a few erect clavate setae, steeply declivous and not excavated at the apex; scrobes almost parallel, the genae with numerous stout suberect pale setae. *Antennae* with the scape very stout, slightly curved, gradually widening from base to apex, densely squamose, and with very long stout suberect curved setae; funicle slender, red-brown, without scaling, joint 1 longer than 2, 3 and 4 longer than broad, 5-7 moniliform. *Prothorax* gradually widening from the base to beyond the middle, then narrowing more rapidly and shallowly constricted near the truncate apex, the base feebly arcuate; the dorsum almost flat longitudinally, with a broad shallow transverse depression on the apical fourth, and a small shallow round impression on each side behind the middle; sculpture entirely hidden by the dense concave scales; a few erect clavate setae along the apical margin. *Elytra* ovate, broadest at about the middle, obtusely acuminate behind, feebly sinuate at the base, the apex slightly produced downwards in ♀; the dorsum convex highest at about the middle, the punctures in the deep striae visible through the scaling, the intervals convex, 2 and 4 bearing very broad suberect scale-like setae, which on the declivity (also on int. 6) become much longer, lanceolate and erect. *Legs* with dense pale brown scaling and stout suberect setae, the femora with a large lateral dark patch in the middle and a small dorsal one near the apex; the tibiae with two minute teeth close to the mucro, the anterior pairs slightly curved inwards at the apex.

Length 2.7—3.5 mm., breadth 1.3—1.8 mm.

Kenya Colony: Chyulu Hills, 5,600 ft., 4 ♂, 5 ♀, vi. 1938 (type); Chania Falls, Thika, 5,050 ft., 1 ♂, i, 1921 (A. F. J. Gedye).

Nearly allied to the genotype, *C. bellus*, Fst., which differs in having a stripe of green scales along the suture, the propleurae being also green, the rostrum is parallel-sided, and the genae lack the stout setae; the eyes are much larger and almost flat; the antennal scape is much more slender, with fine subrecumbent setae, the two basal joints of the funicle are equal, 1 being hardly thicker than 2, and the distal joints much longer than broad; the prothorax is not constricted at the apex; the elytra are truncate at the base; and the anterior pairs of tibiae are distinctly curved throughout.

Ischnobrotus gedyei, sp. n. (Plate 1, fig. 2.)

♂ ♀. Derm black, with dense scaling that is very variable in coloration; general ground-colour (including underside) grey to pale fawn; prothorax with a variable irregular broad median stripe of dark brown divided down the middle by a narrow pale line; elytra (in fully marked examples) with the disk dark brown as far as stria 6, the posterior margin of the area being produced into a long angle on the suture on the upper half of the declivity, with pale patches at the base of intervals 3 and 5; in the middle of the disk a common transverse pale patch extending laterally to stria 3 and deeply sinuate anteriorly and posteriorly, and there is frequently a broad oblique pale band (often reduced or macular) connecting the median pale patch with the pale lateral area at the shoulder; very rarely the whole dorsal area may be dark brown, or with only an elongate pale spot on intervals 3 and 5; but more often the dorsum is pale greyish brown, so that the pale median patch becomes faint or may be almost obliterated.

Head separated from the rostrum by an almost transverse incision, the forehead flat, with a short stria; eyes less convex than usual. Rostrum a little longer than the head, almost parallel-sided, slightly transverse, the dorsal area flat or shallowly depressed down the middle; the sculpture hidden by scaling, the spaces between the scrobes and the epistome not depressed. Antennae comparatively short and stout; scape only shortly exceeding the front margin of the prothorax, widening from base to apex, with dense overlapping scales and stout subrecumbent setae; funicle with the two basal joints equal, 3 twice as long as broad, 4 shorter, 5-7 globular. Prothorax transverse (5:6), feebly rounded laterally, widest at a little behind the middle, very shallowly constricted at the apex, slightly arcuate at the base; the dorsum with a very shallow median stria which reaches neither base nor apex and is almost concealed by scaling, and on each side of it two large rounded shallow impressions, one before the other behind the middle, the rugulose sculpture entirely hidden by scaling, the very short scale-like setae appressed. Elytra of ♂ broadly ovate, shallowly sinuate at the base, with the line from the basal angle to the feeble subhumeral callus on interval 7 straight, obtusely rounded at the apex; elytra of ♀ with the subhumeral callus more strongly developed, the line from it to the basal angle more or less sinuate, and the apex more acuminate; the well-marked striae containing round separated punctures, which owing to the dense scaling appear only as small narrow slits; intervals 1, 3, 5 very slightly more raised on the disk, but 5 forming an obtuse elongate callus at the top of the declivity; no bare scutellar callus at the base; all the intervals with a row of spatulate setae, which are short and subrecumbent

on the disk, and much longer and suberect behind, being rather more numerous on the higher intervals. *Legs* densely squamose, the tibiae with broad lanceolate suberect setae.

Length 4.5-7.0 mm., breadth 2.5-3.5 mm.

Kenya Colony: Chyulu Hills, 5,200-5,600 ft., 53 ♂ 48 ♀, iv, vi, vii, 1938 (type); Thika, 1 ♂, vi, 1938. (A. F. J. Gedye.)

In Hustache's key to the genus *Ischnobrotus* (Ann. Mag. N.H. (19) xviii, 1936, p. 363) this species runs down to *I. kenya*, Hust., 1929, which however differs in having the scape finely pubescent and not squamose; joints 3-7 of the funicle are globular; and the elytra lack the posterior prominence on interval 5, as well as the projecting subhumeral callus in the female.

Entypotrachelus niger, Hust.

2 ex., June 5,600 ft., July 6,600 ft. Described from two specimens taken in the crater of Longonot, in the Rift Valley.

Apotmetus vansomereni, sp. n. (Plate 1, fig. 7.)

♂ ♀. Derm piceous, uniformly covered with bright metallic green scaling, which is not contiguous but forms irregular rings round the punctures; underside with the green scaling confined mainly to the lateral areas of the sternum and the two basal ventrites.

Head with the very shallow punctation concealed by scaling, the forehead with a deep median sulcus, the eyes moderately convex. *Rostrum* separated from the head by an almost transverse incision, longer than broad, parallel-sided in the basal half, with the genae roundly dilated; the dorsal area almost flat, with its lateral margins not defined posteriorly, finely rugulose, with a very low median costa (sometimes obsolescent); the declivous interantennal area concave, containing a low angulate transverse carina behind the margin of the epistome, which is obtusely curved. *Antennae* with the scape rugosely punctate, bearing scattered elongate green scales and numerous stout curved setae; funicle with rather dense whitish setae, joint 2 slightly shorter than 1. *Prothorax* slightly transverse, parallel-sided from the base to beyond the middle, then gradually narrowing to the apex, which is feebly sinuate, the base slightly arcuate and very narrowly marginate; the dorsum flat longitudinally, convex transversely, without any discal depression, set with very low separated oval granules, without any median stria or carina, the interstices filled with green scaling. *Elytra* of ♂ subrotund, only a little longer than broad (6.5:5.7 mm.), widest at about the middle, almost flat dorsally, with the posterior declivity rather abrupt and almost perpendicular, the apex broadly rounded, the base shallowly sinuate; elytra of ♀ differing in being much narrower and almost parallel-sided in the middle, with a small humeral tubercle and two others between it and the basal angle;

the striae very shallow (not easily distinguished unless viewed obliquely from behind), there being four or five accessory ones in addition to the normal ten, all containing a regular row of isolated round punctures, which on the disk are separated by small flattened granules, these granules tending to coalesce laterally to form irregular transverse wrinkles; the intervals broader than the striae, usually bearing indistinct transverse granules and irregular rows of inconspicuous short appressed setae, the scales almost round. Legs red-brown, with sparse yellowish subrecumbent setae, the apices of the femora and tibiae blackish with green scaling, the tarsi blackish; femora coriaceous, the tibiae rugulose, the corbels of the hind pair very narrowly enclosed, joint 2 of the hind tarsi as long as broad.

Length 7-11 mm., breadth 4-7 mm.

Kenya Colony: Chyulu Hills, 5,600 ft., 63 ♂, 43 ♀, vi-vii, 1938 (type); Mt. Mbololo, 5,000 ft., N.E. Teita Hills, 9 ♂, 6 ♀, x, 1938.

This very striking species may be readily distinguished from its previously described congeners by its bright green scaling, the convex pronotum, the accessory striae on the flattened elytra, and the tridentate humeral area in the female.

[It seems desirable to describe here a closely allied species from the adjoining Teita Hills.

Apotmetus dilatatus, sp. n.

The description of *A. vansomereni* applies to this species except in the following details:—

♂ ♀. The green scaling on the prothorax is confined to the disk of the pronotum where it forms three indefinite stripes; on the elytra the scaling is also more restricted, the dorso-lateral margins, the suture and the whole of the posterior declivity being entirely bare and shiny; the inflexed margins of the elytra are also bare except for a stripe of green scaling along the two or three outermost intervals (often abraded); on the underside there are greenish yellow scales at the sides of the sternum only.

Prothorax flattened dorsally (but not depressed), especially in ♂. Elytra more dilated and much more strongly rounded in ♂, being as broad as long, with a tumid elevation on each side of the apex, the median area of the declivity being depressed; the punctures rather larger and shallower, without definite intervening granules; elytra of ♀ also proportionately broader and less convex, the three humeral denticles more prominent, the hind one developed into a short raised carina, and the upper part of the posterior declivity flattened transversely.

Length 8-11 mm., breadth 5-7 mm.

Kenya Colony: Wandanyi, 5,000 ft., Teita Hills (north central), 13 ♂, 4 ♀, iii, 1939.]

Parasystates cinereus, sp. n.

♂ ♀. Derm black; prothorax with only a loose lateral patch of whitish scales at the apical and basal angles, which may sometimes unite to form a lateral stripe; elytra closely covered dorsally in ♂ with minute, grey scales which are not actually contiguous (less dense in the middle of each elytron in ♀), the dorso-lateral margins (intervals 7 and 8) almost bare, the deflexed margins with fairly dense recumbent grey pubescence and scattered narrow whitish scales which become dense on the basal third (often abraded); underside with rather sparse grey setae, and a narrow fringe of white scales in front of the hind coxae.

Head bare, with rugulose punctation and a deep frontal fovea; eyes moderately convex, highest at the middle. Rostrum a little longer than broad, almost parallel-sided in the basal half then widening apically; the dorsal area flat, gradually widening from base to apex, with very shallow confluent punctation and sometimes a mere trace of a median costa. Antennae black, with the funicular joints 1-6 progressively diminishing in length, 7 as long as 3, all longer than broad. Prothorax somewhat broader than long, moderately rounded laterally, widest beyond the middle, feebly constricted at the apex; the dorsum with a longitudinal flattened area in the middle of the disk, covered with large confluent flattened granules which become much smaller and isolated laterally; in the middle of the disk there is a large shallow depression behind the middle and a smaller one in front of it, and a rounded depression on each side behind the middle, but these depressions are sometimes obsolete, especially the lateral ones; the sparse whitish setae transversely recumbent. Elytra of ♂ ovate, very shallowly sinuate at the base, absolutely flat both longitudinally and transversely as far as interval 6 in the middle but rather steeply declivous at the base, the posterior declivity very short and steep, the apices feebly dehiscent, the dorsal margins rounded off and not carinate, stria 6 visible from above; the rather broad shallow striae containing shallow punctures separated by very small shiny granules on the deflexed margins as well as on the dorsum; the intervals flat, with irregular (often duplicated) rows of round shiny granules which are much larger than those in the striae, interval 2 obtusely raised on the declivity, the setae extremely minute and recumbent on the disk, longer and suberect on the declivity; elytra of ♀ only slightly broader, more acuminate behind, with the posterior declivity less steep, the dorsum moderately convex both longitudinally and transversely, highest in front of the middle, the discal area between striae 1 and 4 irregular with raised transverse ridges. Legs black, with the femora red-brown except at base and apex, finely rugulose, with small flattened granules and

rather sparse pale recumbent setae. Venter of ♀ without any median sulcus on ventrite 5, but with only a very indefinite basal impression.

Length 10.5-12.2 mm., breadth 4.6-5.7 mm.

Alt. 5,600 ft., 10 ♂, 5 ♀, vi-vii, 1938.

The nearest ally is *P. minor*, Aur., 1910, from Kilimanjaro, which has the elytra of the ♂ distinctly convex longitudinally, without any basal declivity, and with the dorso-lateral margins sharply costate posteriorly; the prothorax is not flattened in either sex; the elytra of the ♀ are not declivous at the base and have no transverse wrinkles on the disk.

Subleptospyris sparsuta, sp. n. (Plate 1, fig. 8.)

♂ ♀. Dull black; prothorax with a very indefinite interrupted curved lateral stripe of pale scales from the basal angles to beyond the middle; elytra with minute non-contiguous dark grey or brownish scales and rows of indefinite paler grey spots on intervals 2, 4 and 7; underside with short sparse recumbent grey setae.

Head shallowly rugulose, with sparse recumbent grey setae, the frontal fovea shallow; eyes only moderately convex. Rostrum a little longer than broad, with the mandibles prominent, gradually narrowed from the base to the antennae and rather broadly dilated at the genae; the dorsal area flat, very obtusely marginate laterally, shallowly rugulose, with a trace of a median carina; the interantennal area shallowly impressed on each side, the epistome quite indefinite. Antennae with the scape gradually clavate, with short subrecumbent setae; funicle with joint 1 half as long again as 2, 3 longer than 4, 4-7 subequal, elongate and clavate. Prothorax transverse (5:6), gently rounded laterally, widest at the middle, somewhat narrower at the truncate apex than at the feebly arcuate base; the dorsum slightly convex longitudinally, highest behind the middle, finely rugulose, with small low scattered granules, without any smooth median line, and with sparse pale transversely recumbent setae. Elytra ovate, somewhat broader in ♀, sinuate at the base, the apex obtusely acuminate in ♂, more pointed and slightly produced in ♀; the dorsal outline moderately convex, highest before the middle, gradually declivous behind, slightly flattened transversely in ♂, more convex in ♀; scarcely striate, the numerous rows of rather deep round separated punctures more or less irregular, except two or three rows adjoining the lateral margins; the setae very short, recumbent and inconspicuous, except on the declivity where they are a little longer and suberect, and in ♀ a row of four or five long erect setae on interval 1 on the upper part of the declivity. Legs black, with sparse pale setae; femora

coriaceous, with a band of dense narrow whitish scales; tibiae not compressed, with a few scattered round whitish scales, the front pair curved inwards at the apex, the hind pair sharply denticulate. *Underside* very finely shagreened.

Length 5.5-7.3 mm., *breadth* 2.3-3.8 mm.

Alt. 5,600 ft., 24 ♂, 23 ♀, vi-vii, 1938.

The only other known species of the genus, *S. turbida*, Mshl., 1932, is a larger shiny scaleless insect, with the tibiae not compressed and the front pair not curved; the distal joints of the funicle are much shorter, the venter rugulose, etc.

S. turbida was found on a giant *Senecio* at 12,000 feet on Ruwenzori.

Systates egenus, Fst.

6 ex., April, 5,400-5,600 ft. Previously known only from Usambara, Tanganyika.

Systates latirostris, Hust.

2 ex., June, 5,600 ft. Previously known in Kenya from Mombasa and Sekoke, and from near Lake Albert, Uganda.

Systates sobrinus, sp. n.

♂ ♀. *Derm* black, moderately shiny; pronotum without markings; elytra, when unabraded, with rows of small spots formed of three or four narrow pale scales with a coppery reflection on the typical intervals, the accessory intervals with at most a row of single distant scales, but the scaling is nearly always more or less abraded; underside with sparse narrow coppery scales, which are a little broader and denser on the sides of the sternum, and numerous curved erect soft whitish setae.

Head with variable punctuation and sparse scaling, the frontal sulcus deep, the eyes only moderately convex. *Rostrum* separated from the head by an almost transverse furrow, a little longer than broad, gradually narrowing from the base to one-third, then widening to the dilated genae; the dorsal area almost flat, with shallow rugose punctuation and a strong median carina, its lateral margins obtuse, narrowing slightly from the antennae to the base; the interantennal area scarcely declivous, the hind margin of the epistome sharply defined throughout. *Antennae* black, with fine recumbent grey pubescence; scape moderately slender, abruptly clavate; funicle with joint 1 about one-third longer than 2. *Prothorax* transverse (♀ 7:9, ♀ 8.11), rounded laterally, widest at the middle, feebly constricted at the apex, more deeply so at the base, which is slightly narrower, both being truncate; the dorsum strongly convex longitudinally, highest far behind the middle, steeply declivous at the base

which is lower than the apex, closely set with low granules, without any median stria or carina; a few narrow pale scales and inconspicuous recumbent setae. *Elytra* narrowly ovate in ♂, much broader in ♀, subtruncate and immarginate at the base, obtusely rounded at the apex, without any trace of a basal constriction; the dorsum moderately convex longitudinally, sloping towards the base (more steeply in ♀) and steeply declivous (♂) or perpendicular (♀) at the apex, the rows of punctures duplicated in confused pairs, the typical intervals being fairly distinct and much broader than the irregular accessory ones, and bearing a row of setae which are short and suberect on the disk, becoming longer and erect on the posterior declivity; the typical intervals also bear low granules on the apical half. *Legs* entirely black, with rather sparse narrow pale coppery scales; both femora and tibiae in the ♀ only with a fringe of long erect setae on the lower face; hind tibiae of ♂ with the inner sinuation comparatively shallow, occupying less than half the length of the tibia and gradually disappearing above without forming any angulation.

Length, ♂ 8.5-9.0, ♀ 9-10 mm.; breadth, ♂ 3.7, ♀ 4.2-5.0 mm.

Alt. 5,200 ft., 1 ♂, 2 ♀, iv-v, 1938; alt. 5,600 ft, 3 ♂, 5 ♀, iv, vi, 1938 (type).

Nearly allied to *S. (Isaniris) ater*, Mshl., 1920, from S. Rhodesia and Nyasaland, and *S. otiorrhynchoides*, Hust., 1923, from the Belgian Congo. The former differs in having the rostrum shorter, much less dilated at the genae, and the margin of the epistome obsolete; the eyes less convex; the pronotum only slightly sloping at the base; the typical intervals on the elytra almost as narrow as the accessory ones; and the sinuation on the hind tibiae of the ♂ deep, longer than half the tibia, and terminating above in a sharp angulation.

S. otiorrhynchoides differs also in having the rostrum shorter, with the epistomal margin obsolescent in the middle; the eyes are more convex; the pronotum almost flat longitudinally at the base; the elytra less steeply declivous at the base and the rows of punctures irregular, not paired; and the sinuation on the hind tibiae of the ♂ is deeper, less than half the length of the tibia, and terminating above in an obtuse angulation.

S. rubripes, Hust., 1923, from Tanganyika, also belongs to this group, but may be readily distinguished by its red legs and antennae.

Systates chyuluanus, sp. n.

♂ ♀. Derm bronze-black, rather shiny, with very sparse irregular recumbent whitish setae and rows of longer erect ones.

Head with strong, partly confluent punctures, the median sulcus broad and deep; eyes moderately convex. *Rostrum* a little longer than broad, gradually narrowing from the base to the antennae, with the genae rather strongly dilated; the dorsal area narrowing anteriorly from the base, its margins obtusely angulate, the disk with very shallow large confluent punctures and a distinct smooth median carina; the interantennal area declivous, flattened transversely, impunctate; epistome with the posterior margin broadly arcuate. *Antennae* testaceous brown, elongate; scape slender, abruptly clavate, with rather long sub-erect setae; funicle with all the joints elongate, 1 a little longer than 2 + 3, 3 — 6 progressively diminishing, 7 as long as 5. *Prothorax* transverse (3:4), rounded laterally, widest at the middle, the apex very slightly narrower than the base, both being truncate; the dorsum gently convex longitudinally, highest behind the middle, set with low granules which are somewhat convex laterally but greatly flattened on the disk, being usually almost obliterated on the anterior third; frequently there is a fine shallow median stria (when the discal granules are well developed), and rarely the whole disk may be almost smooth and shiny. *Elytra* ovate in ♂, and appreciably broader in ♀, subtruncate and immarginate at the base, and only very slightly produced downwards at the apex in ♀; the dorsal outline sloping very steeply at the base and almost perpendicular at the apex in ♀, much less steep at both ends in ♂, with regular rows of small deep punctures, all the rows being duplicated; but the accessory intervals are exactly like the typical ones (which may be recognised by bearing a rather sparse row of long erect setae), so that the rows of punctures are not in any way paired; in good specimens the recumbent pale setae are not generally distributed but occur in groups of 2—4, producing a vaguely spotted appearance. *Legs* with the femora red-brown, with subrecumbent setae; the tibiae and tarsi paler; tibiae slender, smooth, with fine obsolescent punctation, hind pair of ♂ rather deeply sinuate on the apical half of the inner face, the flattened surface of the sinuation being smooth and glabrous.

Length 5.0-6.5 mm., breadth 2.4-3.0 mm.

Alt. 5,600, 50 ♂, 35 ♀, vi-vii, 1938.

Very closely allied to *S. villosus*, Hust., 1929, from the Aberdare Mts., but the latter species differs in the following characters: the rostrum is parallel-sided in the basal half, the genae much less dilated, and the interantennal area less declivous; the head is more finely and sparsely punctate; the elytra have much more numerous erect setae; and the tibiae are much stouter and more coarsely punctate.

Systates torticornis, sp. n.

♂ ♀. Black, moderately shiny, entirely devoid of scaling.

Head separated from the rostrum by an angulated furrow that is very shallow in the middle, set with strong obliquely confluent punctures and sparse pale setae; forehead broader than the dorsal area of the rostrum, with a shallow median sulcus; eyes moderately prominent. *Rostrum* of ♀ as long as broad, of ♂ distinctly longer, dilated at the genae; the dorsal area quite flat, with coarse shallow confluent punctation, the margins obtusely angulate but not carinate, almost parallel, without any median carina; the declivous inter-antennal area shallowly concave and almost impunctate; the lateral areas shagreened, without any longitudinal carina. *Antennae* red-brown, with fine subrecumbent pubescence; scape abruptly clavate, with a strong double sinuation near the base, this part being compressed and dilated, with the dilation more marked in ♀; funicle with all the joints elongate and clavate, 1 a little longer than 2 + 3, which are equal, 4 shorter than 3 and equal to 5, 6 shorter than 5, 7 longer than 4. *Prothorax* nearly as long as broad in ♂, more transverse in ♀, rounded laterally, widest at the middle, truncate at base and apex, the latter being slightly the narrower; the dorsum convex longitudinally, highest far behind the middle, the base being lower than the apex, with minute recumbent setae. *Elytra* narrowly ovate in ♂, much broader in ♀, steeply declivous at the subtruncate base but without any angulate margin, the posterior declivity perpendicular near the apex in both sexes, the apex not produced downwards in ♀; the shallow striae containing rather large deep separated punctures; the intervals broad, slightly convex, shagreened, with very minute irregular recumbent setae. *Legs* black, with sparse yellowish setae; femora rugulose, without any long setae beneath in ♂; all the tibiae of ♂ with rather short sparse erect setae above and below, front tibiae only very slightly curved inwards at the apex, hind pair of ♂ moderately curved, flattened on the inner face and set with coarse irregular low rounded granules.

Length 8 mm., *breadth* 3-4 mm.

Alt. 5,200-5,600 ft., 2 ♂, 2 ♀, iv-vii, 1938.

The nearest ally is *S. loveni*, Aur., 1926, from Elgon and Lumbwa, which has the scape compressed at the base but without the S-like sinuation; it also differs in having a lateral stripe of whitish scales on the prothorax and elytra, and erect white setae on the elytral declivity.

Systates spp.

4 exx. of two different species.

Mitophorus largus, sp. n.

♂ ♀. Derm shining bronze, with very sparse narrow pale scales and long erect setae; underside with rather more numerous narrow scales, and a broad bare median stripe down the venter.

Head with a deep frontal sulcus and irregular variable deep punctures, sometimes striolate laterally in ♀; eyes moderately convex. *Rostrum* gradually narrowing from the base to the middle and dilated at the genae; the dorsal area flat (sometimes shallowly impressed in front), with a narrow median sulcus and variable large shallow punctures. *Antennae* very slender, red-brown, with sparse recumbent white setae; scape cylindrical in both sexes, abruptly clavate. *Prothorax* as long as broad, feebly rounded laterally, widest at a little beyond the middle, more narrowed behind than in front, the base being slightly narrower than the apex; the dorsum flat longitudinally, with large shallow punctures that are usually confluent transversely, set with rather long suberect white setae on the disk and sparse narrow scales laterally. *Elytra* ovate in ♂, globular in ♀, the dorsal outline of ♂ only moderately declivous at the base, the punctures in the rows deep and round; the intervals broad, shiny and impunctate, each with a row of very long distant erect white setae, the narrow scales sparsely and irregularly distributed, never forming definite stripes or rows of spots. *Legs* with sparse elongate pale scales; front tibiae quite straight on the external edge, the dorsal apical angle not produced into a sharp process in ♂, posterior tibiae of ♂ not curved inwards at the apex; the long erect white setae on the tibiae of ♂ rather sparse, not forming a dense fringe beneath, but more numerous on the dorsal edge, and present also in ♀.

Length 4.4-5.0 mm., breadth 2.0-2.7 mm.

KENYA COLONY: Chyulu Hills, 5,200-5,600 ft. 40 ♂, 44 ♀, iv-vii, 1938; Nairobi, 2 ♂, 2 ♀, x, 1920, 2 ♂, iii-iv, 1921 (A. F. J. Gedye), 1 ♂, 1 ♀, x, 1929 (G. A. K. Marshall); Kabete, 4 ♀, 1922 (H. E. Box); Chania Falls, Thika, 1 ♀, i, 1921 (Gedye).

Belongs to the group of *M. gravidus*, Gerst., 1884, and *M. pilosus*, Hust., 1921, which also bear long erect setae. They both differ in the following characters: the antennal scape is slightly compressed in the ♂ and distinctly so in the ♀; the elytra of the ♂ are very steeply declivous at the base; the front tibiae curve inwards at the apex (especially in the ♂) and their dorsal apical angle is produced into a sharp process over the tarsus in the ♂; the tibiae have no long erect setae on the dorsal edge; the elytra have a sublateral stripe of broad scales, and a similar stripe or row of spots on interval 3.

Subfamily BRACHYCERINAE.

Brachycerus suahilicus, Mshl.

1 ex., July, 5,600 ft. Recorded also from Naivasha, Tanganyika, Nyasaland, and N.W. Rhodesia.

Subfamily HIPPORRHININAE.

Hipporrhinus tenuegranosus, Fairm.

2 ex., May, 5,600 ft. Distributed from Tanganyika to Abyssinia.

Subfamily TANYRRHYNCHINAE.

Stramia obscura, Aur.

4 ex., June, 5,600 ft. Previously known from only a single specimen from Kenya, without precise locality.

Subfamily CLEONINAE.

Lixus massaicus, Klb.

7 ex., May-July, 5,600-6,000 ft. Abundant in Uganda, Kenya and Tanganyika, ranging south to Nyasaland and S. Rhodesia.

Lixus kolbei, Fst.

1 ex., July, 5,600 ft. Also occurs in Nigeria, the Congo, and Uganda.

Lixus bisulcatus, Fst.

7 ex., April-July, 5,200-6,000 ft. Common in Uganda, Kenya, Tanganyika, Nyasaland, and S. Rhodesia.

Lixus sp.

1 ex., July, 5,600 ft.

L. (Gasteroclisus) auricillatus, Boh.

1 ex., April, 5,200 ft. Abyssinia to Natal, Uganda, Congo, Cameroons, and Senegal.

L. (Gasteroclisus) avuncularius, Klb.

2 ex., April, 5,600 ft. Kenya to S. Rhodesia.

L. (Gasteroclisus) comparabilis, Klb.

4 ex., June-July, 5,600 ft. Uganda, Kenya and Tanganyika.

Larinus sp.

1 ex., April, 3,800 ft.

Subfamily HYLOBIINAE.

Aparopionella cristata, sp. n. (Plate 1, fig. 4.)

♂ ♀. Derm black to piceous, normally hidden by a dense amorphous earthy indumentum, set with tufts of very broad erect scale-like setae, which are dark on the dorsum and pale laterally.

Head with the forehead nearly as broad as the base of the rostrum, flat, with the sculpture concealed and with a row of erect spatulate setae on each side; eyes convex, rather prominent. *Rostrum* a little shorter than the pronotum in both sexes, parallel-sided, but slightly wider at the apex, with three narrow straight dorsal carinae (the middle one finely divided on the apical half) which are normally hidden in ♂, and with numerous erect spatulate setae which are usually darker and stouter in ♂. *Antennae* slender, testaceous, with the club fuscous; scape with long erect setae on the apical half; funicle with the two basal joints subequal, 3-7 longer than broad, subequal. *Prothorax* as long as broad, gently rounded laterally, widest at the middle, the apex distinctly narrower than the arcuate base; the dorsum sloping gently forwards from near the base, with rugose reticulate punctation (concealed), without any carina or smooth median line; two irregular longitudinal rows of numerous stout erect dark clavate setae, a lateral row of pale ones, and a transverse row of similar setae along the apical margin. *Elytra* ovate, 1.5 times as long as broad, widest at the middle, sinuate at the base, obtusely acuminate at the apex; the deep close punctures in partly irregular duplicated rows (concealed); the true intervals very narrow and hardly wider than the intermediate ones; intervals 3, 5, 7 and the posterior half of 1 with a row of distant low elongate tubercles, each bearing a tuft of stout erect spatulate setae; intervals 3 and 5 slightly raised at the base, the scutellar area somewhat depressed. *Legs* clothed like the elytra and with numerous stout erect spatulate setae, the tarsi testaceous.

Length 4.0-4.5 mm., breadth 1.6-2.0 mm.

Alt., 5,600 ft., 4 ♂, 3 ♀, vi-vii, 1938.

Hustache (Mém. Mus. Nat. Paris, n.s. ix, 1939, p. 236) described *Aparopionella* as a subgenus of the palaearctic *Aparopion* for a minute species from Mt. Elgon, which I have not seen, giving as the only distinction that the ventral intercoxal process is only twice as wide as the space between the median coxae. But as the African species before me differ also in having the ventral process arcuate instead of truncate, ventrite 2 longer than 1 behind the coxa, the metasternum shorter than a median coxa, and the rostrum with a median sulcus beneath (whereas *Aparopion* has the basal ventrites equal, the metasternum as long as a median coxa, and no sulcus beneath the rostrum), I prefer to treat *Aparopionella* as a distinct genus.

Aparopionella echinata, sp.n.

♂ ♀. Derm shiny black, normally hidden by a dense amorphous incrustation.

Head with the forehead only about half as wide as the base of the rostrum, the eyes not prominent but level with the head. *Rostrum* as long as the pronotum in ♂, a little longer in ♀, with five carinae (concealed), the median one a little higher than the others and not divided anteriorly, set with numerous short broad spatulate erect pale setae. *Antennae* piceous, with the stem of the scape red-brown; scape with a few erect setae on the apical half; funicle as in *A. cristata* except that joint 1 is a little longer than 2. *Prothorax* as long as broad, moderately rounded laterally, widest at the middle, the apex only slightly narrower than the truncate base; the dorsum sloping anteriorly, highest behind the middle, with dense coarse deep punctures, the narrow intervals being somewhat uneven on the disk, without any definite carina or smooth median line; the sculpture entirely hidden by incrustation, with four multiple longitudinal rows of erect spatulate setae, and a transverse row of single erect setae across the front margin. *Elytra* ovate, 1.5 times as long as broad, widest at about the middle, truncate at the base, obtusely acuminate behind, with the normal ten rows of strong deep punctures; the intervals slightly narrower than the punctures, plane and shiny, all of even height (except that 3 is slightly raised at the base), without any tubercles; the alternate intervals with a row of isolated broad erect spatulate setae. *Legs* much more slender than in *A. cristata*, with thinner incrustation and much narrower erect setae; tarsi black, with only joint 4 and the claws testaceous.

Length 3.0-3.5 mm., breadth 1.5-1.7 mm.

Alt. 5,600 ft., 2 ♂, 2 ♀, vi-vii, 1938.

Length 3.2-3.6 mm., breadth 1.5-1.6 mm.

The genotype, *A. minuta*, Hust., is described as a very small red-brown species (under 2 mm.) entirely lacking the erect spatulate setae of the two species described above.

In the collection there are two additional species of this genus, but they are represented by single specimens only.

Subfamily ERIRRHININAE.

Smicronyx sopubiae, sp. n.

♂ ♀. *Derm* entirely black, with dense dark grey scales; elytra with a conspicuous quadrate whitish spot before the middle on interval 4 and a few irregular and variable whitish scales on the disk, mostly behind the middle.

Head with the eyes separated beneath by a space nearly as wide as the antennal club. *Rostrum* as long as the head and prothorax, strongly curved, gradually narrowed from base to apex in ♂, with longitudinally confluent rugulose punctures throughout, densely squamose and with stout curved setae, the

scales becoming much more sparse apically; rostrum of ♀ more abruptly subulate in the apical third and there bare, shiny, with sparse small punctures. *Antennae* black, with blackish setae; scape strongly but gradually clavate; the funicle rather stout, somewhat widening distally, with $1 = 2+3$, $3-7$ transverse. *Prothorax* as long as broad, feebly rounded laterally, slightly narrowed at the bisinuate base, much narrower and constricted at the apex, with narrow post-ocular lobes; the dorsum densely squamose, without any trace of a median carina. *Elytra* much wider at the roundly rectangular shoulders than the prothorax, shallowly trisinate at the base, subtruncate at the apex, parallel-sided to the middle, with a deep subapical depression on each side and the posterior calli very prominent; the dorsal outline flat to the middle then gradually declivous, the striae deep and narrow (but often slightly sinuous), with elongate punctures; intervals with very dense scaling and a row of broad scale-like appressed setae. *Legs* stout, entirely black, with dense dark scaling and stout curved setae; femora with a stout tooth; tibiae deeply bisinuate on the lower edge, with a sharp angulation above the middle. *Underside* with the mesosternal process subtuberculate; ventrite 1 behind the coxae a little shorter than 2, which is longer than $3+4$.

Length 4.5 mm., *breadth* 2.0 mm.

Alt. 6,000 ft., 1 ♂, 3 ♀, bred from galls on roots of *Sopubia* sp. (*Scrophulariaceae*), v, 1938; alt. 5,600 ft., 19 ♂, 25 ♀, vi-vii, 1938.

Most nearly allied to *S. quadrituberculatus*, Hust., 1936, from the French Congo, but the latter species, which is smaller, has the elytra very differently coloured, the antennae and tarsi are ferruginous, and the elytra have an additional small tubercle at the apex of interval 3.

Smicronyx maerens, sp. n.

♂. Derm entirely black, with dense dark grey scaling and a few sparse appressed scale-like whitish setae.

Head with the eyes practically contiguous beneath. *Rostrum* longer than the head and prothorax (11:8), only slightly curved, not narrowed apically, with longitudinally confluent rugulose punctation throughout, which is normally entirely hidden by the dense scaling, and stout curved black setae. *Antennae* black, with broad whitish setae; scape rather slender, gradually clavate only near the apex; funicle with joint 1 a little longer than $2+3$, 3 and 4 as long as broad, the rest transverse and widening distally. *Prothorax* as long as broad, rounded laterally, widest behind the middle, much narrower and constricted into a collar at the apex, the postocular lobes distinct, the base shallowly

bisinate. *Elytra* much wider at the roundly rectangular shoulders than the prothorax and parallel-sided from there to the middle, feebly trisinate at the base, jointly rounded at the apex, with only shallow subapical impressions and without any posterior calli; the dorsal outline distinctly convex, highest well in front of the middle, the fine striae indistinctly punctate and quite straight, the intervals with dense scaling and a row of scale-like appressed setae, a few of which are whitish. *Legs* entirely black, with dense grey scaling; femora thick, with a stout tooth; tibiae shallowly bisinate on the lower edge with a small obtuse projection at one-third from the base. *Underside* as in *S. sopubiae*, sp. n.

Length 3.6 mm., *breadth* 1.8 mm.

Alt. 5,600, 5 ♂, vi, vii, 1938.

Distinguished *inter alia* from the preceding species by its smaller size; the longer, straighter, non-subulate rostrum; and the absence of posterior calli on the elytra.

Smicronyx sp.

1 ex., June, 5,600 ft.

Derelomus abyssinicus, Hust.

2 ex., June, 5,600 ft. Previously known only from Abyssinia.

Subfamily APIONINAE.

Apion stichochaetis, sp. n.

♂ ♀. Rather dull black (the apical margin of the elytra reddish in ♂), with grey setae above, which are sparse and evenly distributed on the pronotum, and on the elytra are arranged in a perfectly straight single row on each interval; underside with sparse whitish setae, without denser lateral patches; legs pale yellow (including trochanters), the tarsi rather darker, and the apices of the femora, tibiae and the two basal joints of the tarsi, narrowly blackish.

Head transverse, shagreened, the forehead with two rows of setae on each side, the eyes moderately convex; a long fringe of white setae beneath the eyes in ♂. *Rostrum* of ♂ as long as the head and pronotum, curved, very gradually narrowing from base to apex, finely rugulose and clothed with appressed longitudinal setae right to the apex, rostrum of ♀ a little longer, more slender, much more strongly curved, slightly narrowed near the base and parallel-sided from there to the apex, finely shagreened, with only a few setae at the base. *Antennae* piceous, with the basal two-thirds of the scape yellow, inserted nearer to the base than the length of the scape, which is nearly as long as the first three joints of the funicle; joint 1 of the funicle nearly as long as 2+3, the distal joints moniliform. *Prothorax* a little broader

than long, the sides rounded in the middle, constricted in front and behind, widest at the base, with the basal angles projecting acutely; the dorsum convex longitudinally, highest a little in front of the middle, shagreened, with a transverse depression close to the base and a round fovea in the middle of it. *Scutellum* round, shallowly impressed, bare. *Elytra* narrowly ovate, obtusely rounded at the shoulders, with the sides gently rounded, widest at the middle, the humeral callus distinct but obtuse; the striae deep, broad and sharply defined, with deep quadrate punctures containing a short pale seta, striae 1 and 2 not deeper at the apex; the intervals not wider than the striae, flat, finely rugulose, each with a perfectly straight single row of long overlapping recumbent setae. *Legs* slender, the hind femora not nearly reaching the apex of the elytra, without sexual differences.

Length 1.5-1.7 mm., breadth 0.7 mm.

KENYA COLONY: Chyulu Hills, 5,200-5,600 ft., 6 ♀, iv, vi, vii, 1938 (type); Nairobi, 2 ♂, 2 ♀, x 1920 (A. F. J. Gedye).

Nearly allied to *A. marshalli*, Wagn., 1908, from Natal, which differs in having the basal angles of the prothorax much less produced; in the ♂ the apical fourth of the rostrum is bare and shiny, the posterior pairs of tibiae have an apical spine, and the apical margin of the elytra is black; in the ♀ the rostrum is much less strongly curved and very shiny throughout, and the posterior pairs of femora are blackish.

Apion rudiostre, sp. n.

♂ ♀. Black to piceous, not very shiny, rather thinly but evenly covered with short narrow white scales, which form a denser triangular spot at the base of interval 3 on the elytra; underside with similar scaling and without denser lateral patches; legs dark piceous.

Head distinctly transverse (2:3), rugosely punctate, with a shallow median stria; eyes moderately prominent, with a fringe of white scales along their lower edge, especially in ♂. *Rostrum* of ♂ curved, almost as long as the head and pronotum, slightly widened above the antennae, rugosely punctate throughout and with sparse subrecumbent narrow white scales almost to the apex, a row of short erect white setae laterally, and on the underside two fairly dense rows of similar erect setae; rostrum of ♀ a little longer than the head and pronotum, with quite similar sculpture, but the supra-antennal dilatation less marked, the scales less conspicuous owing to their being much narrower (almost setiform), and the erect setae on the lower surface less numerous. *Antennae* piceous, inserted at one-third from the base of the rostrum, the space between them and the eye being

longer than the scape, which is nearly as long as the first three funicular joints; joint 1 of the funicle as long as 2+3, 3-6 slightly longer than broad, 7 transverse. *Prothorax* nearly as long as broad, gently rounded laterally, without constrictions, broadest behind the middle, the basal angles not projecting; the dorsum convex longitudinally, highest in the middle, shagreened, with very shallow large punctures, and a short deep median stria at the base. *Scutellum* almost round, bare, flattened or depressed in the middle. *Elytra* ovate, obtusely rounded at the shoulders, gently rounded laterally, widest at the middle, the humeral callus distinct, the dorsal outline moderately convex, highest before the middle, the deep striae with round separated punctures containing a stout white seta, striae 1 and 2 not deeper at the apex; the intervals flat, broader than the striae, rugulose, each with two irregular rows of narrow white scales. *Legs* short, the hind femora not reaching the apex of the elytra; no sexual dimorphism.

Length 2.0-2.3 mm., breadth 1.0-1.1 mm.

Alt. 5,600 ft., 3 ♂, 4 ♀, vi-vii, 1938.

Allied to *A. congolanum*, Hust, 1922, which differs in having the rostrum smoothly punctate, without any rows of erect setae at the sides and beneath; the prothorax is distinctly constricted at the apex; the clothing consists of setae and not scales, and there is only a single row of setae on interval 1 of the elytra.

Apion considerandum, Fhs.

1 ex., April, 5,200 ft. Abyssinia to Natal.

Apion spadiceum, Wagn.

1 ex., June, 5,600 ft. Natal to Eritrea and Arabia.

Apion africanum, Gyll.

9 ex., April-July, 5,200-5,600 ft. Kenya to Natal and Angola.

Apion fortirostre, Wagn.

2 ex., April, June, 5,600 ft. Natal to Abyssinia, Sierra Leone.

Apion hemisphaericum, Wagn.

1 ex., June, 5,600 ft. Transvaal.

Apion tenuicorne, Wagn.

1 ex., July, 5,600 ft. S. Rhodesia.

Apion bomaense, Fst.

3 ex., June-July, 5,600 ft. Belgian Congo and Arabia.

Apion abimva, Burg.

14 ex., June-July, 5,600 ft. Recently described from the Congo.

Apion flexuosum, Wagn.

1 ex., May, 5,400 ft. Uganda, S. Rhodesia, Portuguese E. Africa.

Apion familiare, Fst.

32 ex., April-July, 5,600-6,000 ft. Kenya to Natal.

Apion spp.

9 ex., representing six different species.

*Piezotrachelus kenya*e, Hust.

1 ex., June, 5,600 ft. Mt. Kenya, the Aberdare Mts. and Amboni R.

Piezotrachelus varius, Wagn.

1 ex., April, 5,600 ft. Tropical Africa to Natal.

Piezotrachelus magnirostris, Wagn.

8 ex., June-July, 5,600 ft. S. Rhodesia.

Piezotrachelus residuus, Wagn.

3 ex., June, 5,600 ft. S. Rhodesia.

Piezotrachelus spp.

13 ex., representing five different species.

Subfamily NANOPHYINAE.

Ctenomerus hoplocnemis, sp. n. (Plate 1, fig. 5.)

♂ ♀. Piceous, with fairly dense setiform scaling; prothorax ochraceous to pale yellow, sometimes with an ill-defined whitish patch laterally; elytra with mingled grey and pale brown scales, a large common subtriangular dark patch near but not reaching the base with its apex directed backwards, and with a very indefinite and variable row of small darker spots on intervals 1, 3, and 5.

Rostrum of ♂ three-fourths to four-fifths the length of the elytra, curved, 5-carinate throughout, with the antennae inserted at one-third from the apex; that of ♀ rather more slender and longer than the elytra, the carinae less distinct beyond the antennae, which are inserted at the middle; scrobes continued almost to the apex in both sexes. *Antennae* honey-coloured, with the apices of the funicular joints darker, the club dark with the apical half of the last joint paler; funicle about as long as (♂) or longer than the club, joint 1 longer than 2, the distal joints all a little longer than broad, 5 normal and not asymmetrical. *Prothorax* a little longer than half the basal width, subconical, with the sides almost straight; the long dense setiform scales almost concealing the derm and forming a transverse row of three conical tufts at the middle, the median one being smaller. *Elytra* ovate, separately rounded at the apex, with a broad transverse depression just behind the elevated basal margin, the shoulders with a low obtuse callus; the deep striae containing large oblong punctures which are partly concealed by scaling; intervals 1, 3, 5 very slightly more raised, 3 with a feeble callus near the base bearing a dense tuft of sub-

erect dark brown hair-scales, and a smaller tuft on the suture at the apex of the dark basal triangular patch, interval 8 with a finely granulate carina from the base to beyond the middle; the setiform scaling fairly dense but not entirely concealing the derm. *Legs* piceous, very stout, with fairly dense yellowish setiform scales and a very indefinite paler patch beyond the middle of the tibiae; the front femors with four teeth, the posterior pairs with three, but the middle pair sometimes with a minute additional tooth; tibiae unusually broad, with the upper angle of the corbel produced into a stout sharp tooth, that on the front pair being longer than the others, the front pair with a very deep basal sinuation on the lower edge, the other pairs more shallowly bisinuate.

Length 3.4-4.5 mm., *breadth* 2.0-2.6 mm.

Alt. 5,600 ft., 3 ♂, 1 ♀, vi-vii, 1938.

Readily distinguished from the previously described species by the subapical tooth on the tibiae and the four (instead of three) teeth on the front femora.

Nanophyes sp.

1 ex., June, 5,600 ft.

Subfamily ANTHONOMINAE.

Thamnobius scutellaris, sp. n.

♂ ♀. Derm testaceous brown, the elytra with the following markings which are usually blackish but vary from that to light brown, being sometimes obsolescent: a large common subquadrate basal patch extending laterally to stria 4, and a posterior lateral patch on the declivity which often extends over the whole lateral area to the base; pronotum with rather sparse whitish scales; elytra with sparse setiform scales which are yellowish on the paler areas and dark on the darker ones, and with a conspicuous short stripe of dense white scales at the base of the suture including the scutellum; underside with rather sparse whitish scales and dense broader white scales at the sides of the sternum.

Head with indistinct punctures and sparse recumbent setiform scales; forehead about two-thirds the width of an eye, with fairly dense suberect setiform scales; eyes convex and slightly prominent. *Rostrum* of ♂ much shorter than the pronotum (2:3), slightly curved, closely punctate and densely squamose on the basal three-fourths, the apical area smooth, with sparse minute punctures; rostrum of ♀ longer, but still shorter than the pronotum; the smooth apical area longer. *Antennae* testaceous, the funicle with joint 1 as long as 2+3, the rest slightly transverse and closely contiguous. *Prothorax* somewhat transverse, moderately rounded laterally, widest far behind the

middle, shallowly constricted at the apex, which is much narrower than the bisinuate base; the dorsum rather strongly convex longitudinally, highest behind the middle, declivous in front, with dense even shallow punctation; the scales comparatively broad, short and oval on the posterior third, but narrow and elongate on the anterior part. *Elytra* broadly ovate (11:9), parallel-sided from the prominent shoulders to one-third from the jointly trisinuate base, with no posterior calli; the dorsum sloping posteriorly from before the middle, the striae broad and deep, with large close punctures; the intervals not or but little wider than the striae, rather thinly clothed with setiform scales, those on the basal sutural stripe shorter, broader and much denser. *Legs* testaceous brown, with sparse white setiform scales; femora with a small sharp tooth.

Length 1.7-2.0 mm., *breadth* 1.0-1.1 mm.

Alt. 5,600 ft., 5 ♂, 6 ♀, vi, vii, 1938.

Of the genus *Thamnobius* five species have been described from the Cape Province, South Africa, three from the Belgian Congo, and one from southern Abyssinia; I have numerous undescribed species from S. Rhodesia, but hitherto no other has been recorded from East Africa. The present species can be readily distinguished by its white scutellar marking.

Endaeus sublucidus, sp. n.

♂ ♀. Uniformly testaceous and rather shiny, the derm not concealed by the pubescence.

Head not constricted behind the eyes, which are strongly convex but not prominent; forehead about half as wide as the base of the rostrum, finely rugulose, with a narrow indistinct median carina and sparse suberect pubescence. *Rostrum* as long as the pronotum in ♀, a little shorter in ♂, finely tricarinate in the basal half. *Antennae* inserted at about the apical third of the rostrum in ♀ and at the apical fourth in ♂; funicle with joint 1 as long as 2+3, 4-6 slightly transverse, scarcely widening distally. *Prothorax transverse* (5:6), strongly rounded laterally, widest a little behind the middle, more narrowed in front but not constricted at the apex, arcuate at the base; the dorsum with fairly close strong pubescence, without any smooth median line. *Elytra* ovate, 1.5 times as wide at the shoulders as the prothorax, gently rounded laterally, widest at the middle, rather broadly rounded behind with the apices separated, without any trace of posterior calli, the suture slightly flattened for a short distance at the base; the punctures in the striae fine and close, scarcely diminishing behind, striae 1 and 2 deeper on the declivity; the intervals much broader than the striae, flat, impunctate, with very short sparse recumbent pubescence and each with a row of short suberect setae, without any granules. *Legs* with the front

femora armed with a long sharp tooth, much longer than that on the posterior pairs, and with the usual fringe of setae beyond it; front tibiae only slightly and gradually widening distally, very shallowly sinuate beneath at the base, without any carina or tooth on the lower edge.

Length 2.7-3.0 m.m., *breadth* 1.4-1.5 mm.

KENYA COLONY: Chyulu Hills, 5,600 ft., 5 ♂, 2 ♀, iv, vi, vii, 1938 (type); Chania Falls, Thika, 1 ♂, i, 1921 (*A. F. J. Gedye*).

The nearest ally of the species would appear to be *E. lucens*, Hust., 1937, from the Belgian Congo, which however is described as having the prothorax constricted at the apex, very finely and obsoletely punctate, with large shallow sparse punctures and a raised median line; the front tibiae are also dilated in the middle on the lower edge.

Subfamily ALCIDODINAE.

Alcidodes orientalis, Chev.

1 ex., June, 5,600 ft. Common in Uganda, Kenya, and Tanganyika.

Alcidodes haemopterus, Boh.

5 ex., April-July, 5,600 ft. Abundant throughout Africa, being very variable in size and colour.

Alcidodes amitinus, Klb.

1 ex., June, 5,600 ft. Tanganyika and Portuguese E. Africa.

Alcidodes albolineatus, Boh.

1 ex., June, 5,600 ft. Tropical Africa to Natal.

Alcidodes obsoletus, Gerst.

1 ex., April, 5,200 ft. From Kenya to the Transvaal.

Alcidodes cylindricus, Klb.

1 ex., July, 5,600 ft. Cameroons, Uganda, and southwards to S. Rhodesia.

Alcidodes deermius, Klb.

1 ex., June, 5,600 ft. Hitherto known only from Tanganyika.

It is with regret that I have had to change the name of this very large and well-known genus (*Ann. Mag. N.H.* (ii) iii, p. 582), but Mr. Tams informs me that the earlier *Alcides*, Hübn., is still in use in the Lepidoptera.

Subfamily ITHYPORINAE.

Endeochetus turneri, sp. n. (Plate 1, fig. 6.)

♂ ♀. Derm black to piceous, opaque; head and prothorax with only sparse recumbent yellowish setiform scaling and a small lateral spot in the middle composed of a few broader scales; elytra with fairly dense scaling, the ground-colour being pale yellowish brown with very variable indefinite patches of

dark brown (or *vice versa*) and the following pale yellowish markings: a subquadrate humeral patch from stria 3 to 6, often interrupted on interval 5 and extending furthest backward on interval 4; a common transverse oval sutural patch a little behind the middle, extending laterally to stria 2, strongly arcuate anteriorly and subtruncate posteriorly, rarely extending laterally as a very indefinite narrow band to stria 6 owing to the scales in the ground-colour becoming paler, and adjoined behind (and sometimes in front) by an ill-defined dark brown patch; and finally a pale spot at the apex of interval 5, which is rarely obsolete; underside with sparse yellowish setiform scales.

Head very closely and strongly punctate, with a very shallow impression in the middle of the forehead. *Rostrum* curved, comparatively short and stout, only as long as the prothorax, a little stouter and parallel-sided in ♂, more slender and slightly dilated at the apex in ♀, strongly and closely punctate in the basal half with a narrow smooth median line. *Antennae* inserted beyond the middle in both sexes, but a little nearer to the apex in ♂, piceous; funicle with the two basal joints subequal, 3 longer than 4 and both longer than broad, 5-7 globular and widening progressively. *Prothorax* as long as broad, strongly and regularly rounded laterally, widest at the middle, feebly constricted at the apex, scarcely wider at the base, which is truncate with its angles very obtuse; the dorsum strongly convex longitudinally, highest at the middle, opaque, with rugose confluent punctation, the narrow intervals uniting more or less to form very sinuous carinulae, with a strong narrow smooth carina from the apex to behind the middle; the punctures filled with a dark indumentum, and containing an elongate recumbent setiform scale, there being a few broader scales laterally and on the posterior fourth of the median line. *Scutellum* very small, bearing a few scales. *Elytra* ovate, with the obtusely rounded basal angles projecting laterally well beyond the base of the prothorax, very gradually widening from the basal angles to the middle, obtusely acuminate behind; the rather broad deep striae containing large round separated punctures which are partly concealed by scaling and contain a short recumbent seta; the intervals costate (except 1, which is flat) with a row of numerous round shiny granules, each bearing a short stout recumbent seta, 3 and 5 rather more elevated basally, 4 and 6 flat and without granules at the base where they are covered by the pale humeral patch. *Legs* shorter than in the genotype, piceous, with sparse recumbent pale setiform scales and an indefinite whitish patch beyond the middle on the hind tibiae; femora with a short sharp tooth, the hind pair only reaching the apex of the elytra; tibiae deeply bisinuate beneath, with

a strong obtuse projection above the middle, the apical fringe of setae black.

Length 6.0-7.5 mm., *breadth* 2.5-3.1 mm.

Alt. 5,600 ft., 10 ♂, 4 ♀, vi-vii, 1938.

The genotype, *E. elegans*, Fairm. (= *jucundus*, Klb.), from Tanganyika, differs in having a much longer and more slender rostrum, which is longer than the prothorax, especially in the female (11:8); the distal joints of the funicle are longer than broad; the legs are much longer, the hind pair extending well beyond the elytra and bear two conspicuous white patches; and the elytra have a broad sharply-defined transverse fawn-coloured band, which has its front margin very deeply bisinuate and its hind margin concave.

Named after Mr. Allen Turner who assisted in the Expedition and has also collected a large number of interesting Coleoptera in other parts of Kenya.

[It seems desirable to describe here another allied species of *Endeochetus* that also occurs in Kenya.

Endeochetus levicollis, sp. n.

♂ ♀. Derm black, shiny; head and prothorax almost bare; elytra with dense mottled dark and light brown scaling and the following pale yellowish marking: a quadrate humeral patch from stria 3 to 6, which becomes rather indefinite behind; and a broad common undulating band behind the middle extending to stria 7, its anterior margin being quadrisinuate (projecting furthest forward on the suture) and its hind margin trisinuate.

Head with strong separated punctures and a shallow frontal fovea, without any obvious scales or setae. *Rostrum* curved, stout, slightly shorter than the pronotum, parallel-sided in ♂, very slightly narrower and more dilated at the apex in ♀, with six irregular rows of strong punctures (the external ones sulcate) on the basal half, four of which continue finely to the apex; all the punctures much finer in ♀. *Antennae* as in the preceding species. *Prothorax* globular, nearly as long as broad, very strongly and regularly rounded laterally, widest at the middle, feebly constricted at the apex which is somewhat narrower than the base, the basal angles entirely rounded off; the dorsum strongly convex longitudinally, highest behind the middle, closely set with large but not confluent punctures and with a smooth (not carinate) median line which reaches neither base nor apex, the intervals between the punctures smooth and shiny; the setae in the punctures on the disk very short and inconspicuous, becoming scale-like laterally. *Scutellum* very small, with a few scales. *Elytra* of the same shape as in *E. turneri*; the striae narrow, mostly bare, with small separated punctures; the

intervals broad, convex but not costate, all of equal height, with a row of small flattened granules which almost disappear behind the middle, each bearing an appressed scale-like yellow seta. *Legs* short and stout, rugosely punctate, with patches of broad yellow scales on the hind femora just before the clavate part, dorsally near the apex, and on and round the tooth, and a dorsal patch on the hind tibiae beyond the middle; femora with a stout tooth, the hind pair not nearly reaching the apex of the elytra; tibiae as in *E. turneri* but rather shorter and stouter, and the apical fringe of setae red.

Length 5.5-6.5 mm., *breadth* 2.2-3.0 mm.

KENYA COLONY: Ngong, 1 ♂, 2 ♀, iv-vii, 1934 (*Dr. V. G. L. van Someren*).

Readily distinguished from the other species by its smooth shiny thorax.]

Ichniochetus stigma, Klb.

2 ex., April, June, 5,600 ft. A rare species, hitherto known only from Usambara.

Subfamily CRYPTORRHYNCHINAE.

Mecistocerus granifer, sp. n.

♀. *Derm* dull black, with dense dark brown scaling variegated with pale brown markings.

Head with rugose reticulate punctation and fairly dense ochreous brown scaling, the forehead with a low flattened median carina. *Rostrum* tricarinate on the basal third. *Antennae* inserted at a little behind the middle of the rostrum, honey-brown; funicle entirely devoid of pubescence, joints 1 and 2 equal, 3-5 longer than broad (4 the longest), 6 and 7 as long as broad, subequal. *Prothorax* slightly transverse, gently rounded laterally in the basal half, more rapidly narrowed in front and constricted at the apex, widest at about the middle, feebly bisinuate at the base; the dorsum slightly convex longitudinally, highest near the base, with a shallow transverse depression near the apex and set with large deep reticulate punctures and a narrow sinous median carina from the apex to three-fourths; each puncture with a suberect stout spatulate seta, but the narrow intervals without scaling except for an ochreous patch on each side of the apex and a small ochreous spot in the middle of the pleurae. *Scutellum* convex, bare, shiny. *Elytra* much wider at the shoulders than the base of the prothorax, parallel-sided from there to beyond the middle, with obtuse posterior calli and a broad transverse impression on the disk at one-fourth from the base; the shallow striae with large deep subquadrate punctures which diminish behind; the intervals of equal height,

a little wider than the punctures, rugulose, each with a continuous row of small granules bearing a suberect scale-like seta. *Legs* with the scaling dark brown on the basal half of the femora turning to ochreous apically, the tooth small on the anterior pairs, much larger and triangular on the hind pair; tibiae unicolorous brown, not narrowing from the middle to the apex, almost straight on the lower edge, with the external apical angle rounded.

Length 5.5-7.5 mm., breadth 2.5-3.5 mm.

Alt. 5,200-5,600 ft., 3 ♀, iv, vi, vii, 1938.

This species may be distinguished from its congeners by the continuous rows of granules on the elytra and the subcarinate forehead.

Mecistocerus sp.

1 ex., June, 5,600 ft.

Isorampus acalloides, Hust.

43 ex., June-July, 5,600 ft. Known only from the forest zone on Kilimanjaro, 6,000-8,700 ft.

Subfamily CEUTHORRHYNCHINAE.

Paroxyonyx humeridens, Hust.

50 ex., June-July, 5,600 ft. Quite recently described from Kitale, Uasin Gishu, 7,000 ft.

Micrelus cruciatus, Schultze.

16 ex., June-July, 5,600 ft. Originally described from Usambara.

Micrelus sp.

1 ex., July, 5,600 ft.

Subfamily MENEMACHINAE.

Anamelus, gen. nov.

Head with the eyes narrowly separated. *Rostrum* with the scrobes not continued beyond the antennae. *Antennae* with the funicle not widening distally, the first joint of the club shorter than the rest together. *Elytra* oblong-ovate, covering the pygidium, wider than the prothorax, with stria 1 reaching the base, which is jointly trisinate. *Legs* with all the femora bearing a sharp triangular tooth, the front pair only moderately larger than the hind pair; front tibiae curved in the basal third, then straight to the apex, narrowing from the middle to the apex, without any long erect setae on the lower edge, the mucro obsolescent. *Sternum* with the anterior part of the prosternum only half as long as the coxae, which are narrowly separated, the posterior part produced in the middle and emarginate;

mesepimera produced upwards but not visible from above; metasternum a little longer than ventrite 1 behind the coxa, the episterna parallel-sided. Venter with ventrite 2 as long as 3+4 in the middle.

Genotype: *Anamelus punctum*, sp.n.

Allied to *Menemachus*, Schönh., which differs *inter alia* in having the anterior tibiae parallel-sided dorso-ventrally and strongly curved throughout, with a row of long erect setae on the lower edge, and the longitudinal mucro strongly developed, being nearly as long as the uncus; the front femora are much larger than the posterior pairs, with a very large tooth, beyond which is a pair of erect setae.

Anamelus punctum, sp. n.

♂ ♀. Black, with fairly dense overlapping narrow scales which partly conceal the derm; head with a median whitish spot just behind the eyes; pronotum with an indefinite macular sub-lateral whitish stripe (which may be reduced to a spot at the apex and the base), and a faint pale transverse discal band behind the middle; elytra with variable mixed dark brown and fulvous scales and sometimes a few whitish ones, an ill-defined transverse fulvous patch at the base between stria 2 and the shoulder, and a conspicuous white spot on the suture behind the middle confined to interval 1; underside with uniform sparse narrow grey scales.

Head with the eyes separated by a space as wide as the distal joints of the funicle. *Rostrum* a little shorter than the pronotum in both sexes, with very rugose punctation and a fine median carina in ♂, much more finely punctate and tricarinate at the base in ♀. *Antennae* with joint 1 of the funicle longer than 2, the distal joints moniliform. *Prothorax* slightly transverse (7:8), almost parallel-sided from the base to beyond the middle, narrowed but not constricted at the apex, which is more than half as wide as the bisinuate base (5:8), the basal angles rounded; the dorsum with dense fine punctation, partly hidden by scaling, and a fine smooth median line. *Scutellum* with whitish scales. *Elytra* suboblong, broadly rounded behind, shallowly impressed round the scutellum, with a broad transverse subapical depression, the narrow deep striae indistinctly punctate, the flat intervals densely and finely punctate. *Legs* black, with the tarsi ferruginous to piceous, with rather sparse setiform grey scales; hind tibiae almost straight on the lower edge and shallowly sinuate dorsally.

Length 2.7-3.0 mm., *breadth* 1.1-1.2 mm.

Alt. 5,600 ft., 3 ♂, 2 ♀, vi-vii, 1938.

Menemachus sp.

1 ex., June, 5,600 ft.

Elattocerus sp.

1 ex., June, 5,600 ft.

One specimen was also found of which the genus is uncertain.

Subfamily BARIDINAE.

Chelonebarus, gen. nov.

Rostrum separated from the globular head by a deep basal depression, laterally compressed at the base, scarcely narrowed dorso-ventrally at the apex; mandibles bidentate. *Antennae* inserted beyond the middle of the rostrum in both sexes; scape nearly as long as the funicle, reaching the eye; funicle not widened distally, joint 7 distinct from the club; the basal joint of the club shorter than the rest together. *Prothorax* strongly transverse, deeply bisinuate at the base. *Elytra* unusually broad and subquadrate, much wider at the prominent shoulders than the base of the prothorax, highest close to the base and sloping from there rather steeply backwards, very broadly rounded behind, with large obtuse subapical calli and deep narrow striae. *Legs* with the femora slightly clavate and unarmed, the hind pair reaching the apex of ventrite 4; tibiae sharply bent at the base, thence almost parallel-sided to the apex, shallowly sulcate, with a small uncus and a minute mucro; tarsi with joint 3 broadly bilobate, 1 almost bare beneath, 2 pubescent only on the apical half, and 3 bare at the base, the claws very small and closely approximated. *Sternum* with the prosternal margin deeply sinuate and without any fringe of setae; the anterior portion of the prosternum unusually short, only slightly longer than the postcoxal part, the margin of which is broadly truncate in the middle, the intercoxal process as wide as a coxa; mesosternum very short, deeply depressed, the intercoxal process nearly twice as wide as a coxa, vertical and fused with the metasternum, which between the coxae is about as long as a mesocoxa. *Venter* with the intercoxal process very broad, nearly twice as broad as a coxa, gently arcuate; ventrite 1 behind the coxa as long as the metasternum between the coxae, and a little longer than 2, the suture between them distinct; pygidium entirely covered by the elytra.

Genotype: *Chelonebarus partimpunctatus*, sp.n.

The species upon which this genus is based has a very distinct facies, as compared with known African Barids, owing to the unusually short and broad elytra, with their steep backward slope from near the base; the shortness of the prosternum in

front of the coxae is also quite exceptional ;and the short metasternum and long scape are characteristic; the punctation of the elytra is quite abnormal.

Chelonebarus partimpunctatus, sp. n.

♂ ♀. Testaceous brown, without scaling, the elytra, legs and antennae rather paler.

Head with very shallow close punctures. *Rostrum* of ♂ longer than the pronotum (9:7), gently curved, closely and strongly punctate almost to the apex, with five narrow indefinite carinae; rostrum of ♀ a little longer (10:9) and narrower, coarsely punctate only at the base, elsewhere shiny and finely punctate, without carinae. *Antennae* with joint 1 of the funicle longer than 2, 3 longer than broad, the rest transverse and subequal. *Prothorax* transverse (2:3), widest at the base, narrowing with a slight curve to the apex, with a subapical constriction which is continued rather deeply across the dorsum, the basal angles rounded; the dorsum strongly convex longitudinally, sloping steeply in front, highest behind the middle, closely set with strong punctures, leaving only a narrow irregular smooth median line. *Scutellum* small, rounded, bare, with a median depression. *Elytra* only a little longer than broad, much broader at the prominent shoulders than the base of the prothorax (8:5), almost parallel-sided from there to the middle and broadly rounded behind, strongly convex transversely especially near the base, with distinct obtuse subapical calli; the striae narrow and deep, with small indistinct distant punctures, except in the basal third of striae 1 and 2 where the punctures are large and close, stria 7 reaching the base within the humeral callus; the intervals broad and flat, shagreened, with a row of almost obliterated punctures, except on the basal third of intervals 1-2 where the punctures are large and dense, being of about the same size as those in the adjoining striae, and on the basal fifth of interval 3 where there are strong duplicated punctures; interval 9 subcostate. *Legs* with coarse punctures, each containing a short pale seta. *Underside* strongly punctate, with sparse pale setae.

Length 3 mm., breadth 1.8 mm.

Alt. 5,600 ft., 1 ♂, 1 ♀, vi, 1938.

Baris aeneipennis, Hust.

9 ex., June-July, 5,600 ft. Only known previously from Kijabe, Kenya, 7,000 ft.

Baris naivashensis, Hust.

1 ex., July, 5,600 ft. Known from Naivasha and from Unyoro, W. Uganda.

Baris massaica, Aur.

3 ex., July, 5,600-6,600 ft. Recorded from Bura and Voi in Kenya, and from Kilimanjaro and Beira.

Baris spp.

3 ex. representing three different species.

Subfamily CALANDRINAE.

Calandra oryzae, L.

8 ex., April-July, 3,800-5,600 ft.

Subfamily COSSONINAE.

Cossonus fossatirostris, sp. n.

♂ ♀. Red-brown to piceous, moderately shiny.

Head with small dense punctures, the forehead with a shallow median sulcus (continuous with that on the rostrum) and a deep fovea; eyes moderately convex. Rostrum similar in the two sexes, much longer than broad, narrowing from the base to the middle and very broadly dilated at the apex, the dilatation being subtriangular and not subquadrate; the dorsal area with a broad shallow sulcus which is usually more sparsely punctate than the raised sides; the broad apical area quite flat transversely and with small separated punctures. Antennae with the red-brown scape longer than the black funicle (5:4); joint 1 of the funicle much longer than 2. Prothorax as long as broad, moderately rounded laterally, widest at the middle, and with a rather deep narrow subapical constriction; the dorsum gently convex longitudinally, fairly evenly set with small separated punctures of approximately the same size, with a smooth median line which is often indefinite in front, widens a little in the middle and becomes carinate near the base, there being on each side of the carina a coarsely punctate elongate depression which extends from the base to less than one-third. Elytra only very slightly wider than the widest part of the prothorax, the deep striae with strong close punctures which become much smaller behind, stria 1 curving outwards at the base; the intervals not wider than the striae, slightly convex, with an irregular row of very fine punctures, interval 1 quite flat and narrowing at the base into a fine carina, 9 forming a low broad costa at the apex. Underside: the distances between the three pairs of coxae in the ratio of 3:4:5.

Length 4.3—6.5 mm., breadth 1.1-2.0 mm.

KENYA COLONY: Chyulu Hills, 5,600 ft., 11 ex., vi, 1938 (type); Chania R., 7,800 ft., 1 ex., vii, 1929 (R. E. Dent).

Belongs to the group of *C. carinicollis*, Fhs., 1871, which also includes *procerus*, Gerst., 1871, *fraudiger*, Fst., 1895, and *fraudulentus*, Klb., 1898; but all these species differ in having no sulcus on the rostrum, which in the first two bears a median carina. *C. fraudulentus* also differs in having the front femora obtusely subdentate.

Cossonus gracilirostris, sp. n.

♂ ♀. Shining black, the tarsi and the narrow part of the scape testaceous, the funicle red-brown.

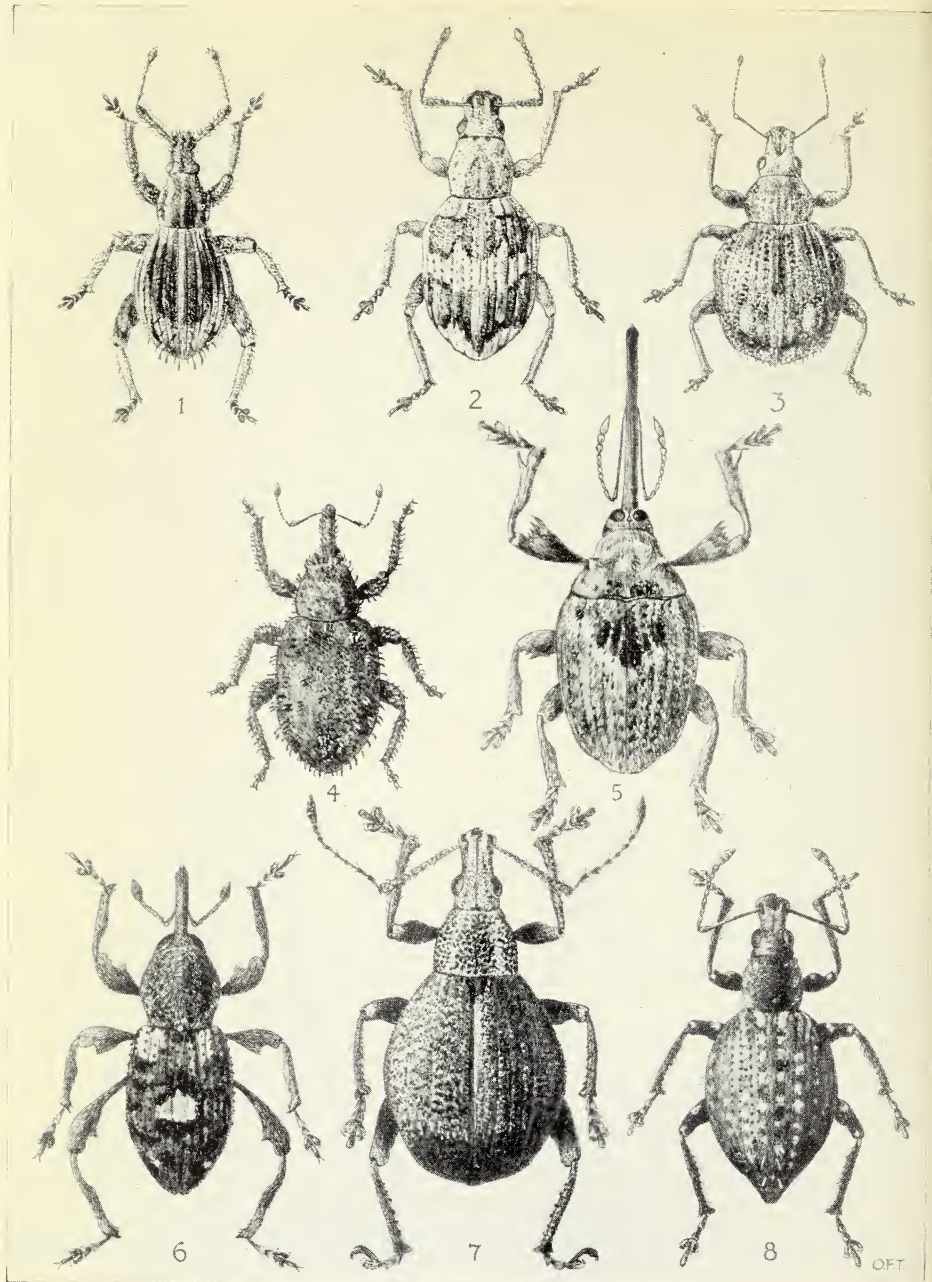
Head conical (the eyes being almost flat) with a very shallow transverse impression a little behind the eyes, which are longer than the temples; vertex with very minute scattered punctures, those on the forehead small and widely separated, the median fovea small. Rostrum nearly twice as long as the head, comparatively slender, the subquadrangular apical dilatation in ♂ slightly longer than broad, occupying less than half the length of the rostrum and more convex, whereas in ♀ it is distinctly longer than broad, less convex and occupies half the length of the rostrum; the punctation fine and sparse throughout dorsally but becoming much coarser laterally on the basal half. Antennae with the scape much longer than the funicle (4:3), the latter with joint 2 longer than 1. Prothorax about as long as broad, gently rounded laterally, widest at about the middle, more narrowed in front and very shallowly constricted at the apex; the dorsum evenly set with strong separated punctures, without any smooth stripes, and with a subquadrate median basal depression extending for less than one-third of the length and containing coarse confluent punctures and an irregular median carina; the base constricted, with the angles slightly projecting. Elytra much wider at the roundly rectangular shoulders than the prothorax, parallel-sided from there to beyond the middle, flattened only on the basal half as far as stria 3; the striae deep, with strong separated punctures which diminish behind, striae 1-3 deeper at the apex; the distal intervals broader than the striae, with an irregular row of minute punctures, 9 only slightly costate at the apex. Underside: the distances between the three pairs of coxae in the ratio of 1:3:3.

Length 3.5-5.0 mm., breadth 1.0-1.7 mm.

Alt. 5,600 ft., 17 ♂, 18 ♀, vi-vii, 1938.

The form and sculpture of the pronotum is very similar to that of *C. immeritus*, Fhs., 1871, but in the latter species the sides are more abruptly narrowed near the apex, the punctures are considerably larger, and the basal depression is shorter and less well defined; moreover the apical dilatation of the rostrum is almost obsolete.

PLATE 9.



New *Curculionidae* from Chyulu Hills.

EXPLANATION OF PLATE.

1. *Cadoderus lepidus*, Mshl., sp. n. ♂.
2. *Ischnobrotus gedyei*, Mshl., sp. n. ♂.
3. *Tapinomorphus humerosus*, Mshl., sp. n. ♂.
4. *Aparopionella cristata*, Mshl., sp. n. ♀.
5. *Ctenomerus hoplocnemis*, Mshl., sp. n. ♀.
6. *Endeochetus turneri*, Mshl., sp. n. ♂.
7. *Apotmetus vansomereni*, Mshl., sp. n. ♂.
8. *Subleptospyris sparsuta*, Mshl., sp. n. ♀.

Cossonus sp.

1 ex., July, 5,600 ft.

Pseudomimus amitinus, Voss.

1 ex., June, 5,600 ft. Recently described from Usambara.

Pseudomesites collaris, sp. n.

♂ ♀. Black, rather shiny; elytra with a broad testaceous-brown stripe between striae 3 and 6, but widening near the base to 2 and 7, and covering the whole posterior declivity except the suture.

Head with fairly numerous small separated punctures, the forehead similarly punctate and about five-sixths as wide as the base of the rostrum, with an obsolescent median fovea. Rostrum longer than the head and more than half as long as the pronotum (4:7), slightly widened at the middle and parallel-sided from there to the apex, with fine separated punctures throughout; scrobes regularly curved and attaining the lower angle of the eyes; rostrum of ♀ a little narrower and with the apical dilatation less evident. Antennae inserted at the middle of the rostrum, red-brown, with the club paler; scape as long as the first five funicular joints; funicle with joint 1 longer than 2, 2 slightly longer than 3, 3-7 subequal, transverse, closely set, not widening distally. Prothorax of ♂ as long as broad, the width being equal to the width of the elytra at their shoulders, parallel-sided in the middle and rather abruptly narrowed both in front and behind, being thus almost octagonal, only very shallowly constricted into a collar at the apex, which is narrower than the truncate base; the dorsum slightly flattened in the middle of the disk, but sloping rather steeply at the base, finely coriaceous, evenly and closely set with small separated punctures; prothorax of ♀ a little longer than broad (7:6), slightly narrower than the elytra at their shoulders, not flattened on the disk and sloping less steeply at the base. Elytra truncate at the base, very gradually widening from the rectangularly rounded shoulders to two-thirds the length, with deep striae containing strong separated punctures which diminish behind; the intervals convex, shiny, each with a single irregular row of minute punctures. Legs testaceous brown; femora almost impunctate, without setae; front tibiae rather abruptly dilated beneath on the apical half, the margin of the dilatation being sinuate; tarsi with joint 4 very narrow at the base and rather abruptly clavate. Sternum with the mesosternal process more than three times as wide as the very narrow prosternal one.

Length 2.8-3.3 mm., breadth 0.9-1.1 mm.

Alt. 5,600 ft., 2 ♂, 1 ♀, vi-vii, 1938.

The unusually broad prothorax distinguishes this small species from all its known congeners.

Pseudomesites suturifer, sp. n.

Head and rostrum black, pronotum red-brown, except for the apical margin which is broadly and indefinitely blackish and the lateral margins which are narrowly so; elytra red-brown dorsally as far as stria 7, except interval 1 which is blackish throughout, underside (including margins of elytra) entirely black.

Head with very sparse fine punctures; forehead four-fifths as wide as the base of the rostrum with larger unevenly distributed punctures and a variable median fovea. Rostrum short, a little longer than the head, broad, gradually widening from base to apex, rather shiny, with small separated punctures throughout, scrobes bent sharply downwards immediately in front of the eyes. Antennae inserted behind the middle of the rostrum, red-brown, with the club fuscous; scape comparatively slender, gradually clavate, as long as the first five funicular joints; funicle with joint 1 much longer than 2, 2-7 transverse, subequal closely approximately, not widening distally. Prothorax as long as broad, gently rounded laterally, widest slightly behind the middle, more narrowed in front but not constricted at either base or apex, the basal margin feebly bisinuate; the dorsum rather shiny, fairly evenly set with strong separated punctures. Elytra much wider at the rectangularly rounded shoulders than the prothorax (4:3), parallel-sided to beyond the middle; the striae deep, containing strong spaced punctures which diminish behind; the intervals convex, rather shiny, with a single irregular row of minute punctures, and without any setae. Legs black, with the tibial uncus and tarsus red-brown; femora almost impunctate, without setae; front tibiae regularly widening from base to apex; tarsi with joint 3 shallowly bilobate on the anterior pairs, scarcely bilobate on the hind pair, joint 4 gradually clavate. Sternum with the mesosternal process about three times as wide as the prosternal one.

Length 2.7-3.5 mm., breadth 1.0-1.2 mm.

Alt. 5,200-5,600 ft., 19 ex., v-vii, 1938.

A somewhat aberrant species owing to the lack of any sexual dimorphism, the gradual widening of the rostrum, the more prominent shoulders of the elytra, and the reduction in the lobation of the third tarsal joint.

Pseudomesites sp.

1 ex., April, 5,600 ft.

Stenoscelis binodifer, sp. n.

Piceous to red-brown, rather shiny, the head and prothorax usually darker than the elytra; antennae and tarsi honey-coloured.

Head finely shagreened, with small punctures that are separated by spaces equal to their own diameters; eyes quite flat. *Rostrum* parallel-sided, with small separated punctures, and with a short longitudinal impression in front of it, both of these being often more or less obsolete; the dorsal outline flat; the epistome with two elongate punctures in the middle. *Prothorax* transverse (5:6), widest near the base, shallowly sinuate laterally in the middle, and moderately constricted into a collar at the apex, the constriction being continued shallowly across the dorsum, the apical margin feebly sinuate in the middle; the dorsum with rather large punctures which are wider than the intervals and become larger and confluent laterally. *Elytra* cylindrical, not wider behind, 2.3 times as long as the prothorax, with deep striae throughout, the contained punctures small and close, stria 3 reaching the base, but not stria 2; the intervals about as broad as the striae dorsally, with an irregular row of small punctures, which are replaced on the declivity by minute sharp granules, there being a much larger prominent granule at the apical junction of intervals 3 and 9; ints. 2 and 3 uniting at the base and there rather tumid and rugulose, the bases of 4 and 6 being also somewhat rugulose; the setae on the declivity minute and recumbent.

Length 3-4 mm., *breadth* 1.0-1.2 mm.

Alt. 5,600 ft., 23 ex., vi-vii, 1938.

From all the three previously described African species of *Stenoscelis-hylastoides*, Woll., 1861 (the Cape, St. Helena), *crassifrons*, Woll., 1873 (Natal), and *scutellatus*, Hust., 1936 (Abyssinia), the present species may be readily distinguished by the two prominent subapical granules on the elytra.

There are in addition three specimens of *Cossoninae* belonging to three different species of which the generic position is uncertain.

THE FOREST TYPES OF MOUNT ELGON.

By I. R. DALE, M.A. (Oxon), F.L.S.

FOREWORD.

The accompanying map is a compilation from Uganda Survey Department sheets and maps in possession of the Kenya Forest Department. I am indebted to Mr. G. Fairbairn of Mt. Elgon Forest Station for his amendments on the distribution of the forest types on the Kenya side, and to the Conservator of Forests of Uganda for permission to publish this paper.

GEOGRAPHICAL NOTE.

Mt. Elgon, the Masaba of the Baganda and the Baguishu and the Terriet of the Sebei, is a large, ancient, solitary volcano. It is approximately fifty miles long from north to south, and, excluding the Nkokonjero "peninsula," about thirty miles broad. The "peninsula" is a ridge, about twelve miles long, and rising to over 7,000 ft., jutting out in a westerly direction from the main mountain towards Mbale. The summit of the mountain is the old volcanic crater. The rim has largely been worn away, but the odd remaining portions are in the neighbourhood of 14,000 ft. The highest point, Wagagai, 14,178 feet, is in Uganda, but Sudek, the boundary peak, is only some sixty feet lower. The bottom of the crater is at about 12,000 feet. The whole crater is drained by the boundary stream, the Suam. In the North and North-West the mountain slopes gently to 6,000 feet, but thence the fall is precipitous in places to the plains' level of about 3,500 feet. In the West and South-West, expecting the Nkokonjero "peninsula," the slopes are steep down to the general level of the Buguishu country, 4,000 feet to 5,000 feet. The slopes on the Kenya side, the East and the South, are far more gradual, though steep bluffs occur at the ends of lava flows. To the East the mountain falls away to the general level of the Trans-Nzoia at 6,500 feet. In the South the slopes are more prolonged as the general altitude of North Kavirondo is lower.

CLIMATIC NOTE.

The prevailing winds are from the North-East, and having blown over Turkana and Suk are usually hot and dry, but that part of the mountain South-West of the Cherangani-Marakwet hills benefits from their interposition. Rainfall figures from places outside forests are not of great use in assessing rainfall within the forests. The Kenya Forest Station near Endebess at about 7,800 feet has had an average fall of 45 inches for the last 10 years. Assessing the fall from the forest types of the middle slopes I should say that North and North-East Elgon get a fall of about 40 inches, the East 45 inches, the South 50 inches, and the West including the Nkokonjero "peninsula" the neighbour-

hood of 60 inches. The main rainy seasons are in May and June and in November, but the only droughty time is from January to March. Being an isolated mountain deposition from mist and dew must be considerable. For reasons of clarity the very numerous streams coming off the mountain have not been shown in the accompanying map. It may be as well to state that the water supplies of a very large region are derived from the mountain and it is absolutely essential for this and climatic reasons to preserve the Elgon forests. No temperature figures are available. The crest of the mountain is well below the permanent snow line.

FOREST TYPES.

To understand the present forest edge it is necessary to remember that the slopes of the mountain from Butandiga in the West round the North to Chemilil in the South-East were inhabited by cattle owning peoples who fired the grasslands regularly and gradually pushed back the forest edge. (The Masai removed themselves from the Trans-Nzoia on the rumour of the approach of Europeans.) The Baguishu in the South and South-West are cultivators, who before the advent of European vegetables and arabica coffee had little need to cultivate above 6,000 feet. Forest destruction from 6,000 feet to 7,000 feet must have been very recent.

The following tropical woody vegetational types on Dr. Burt Davy's classification would appear to be present:—

- Alpine elfin woodland,
- Montane bamboo forest,
- Upper montane rain forest.
- Savanna woodland, and possibly
- High montane conifer forest and Lower montane rain forest.

These headings are insufficient to describe adequately the composition of the Elgon forests, so I have sub-divided them as follows:—

1. Alpine Elfin Woodland.
 - (a) Upper moorlands.
 - (b) "Heath" zone.
 - (c) Upper bamboo transition forest.
2. Montane Bamboo Forest.
3. Upper Montane Forest.
 - (a) Mixed Pygeum forest.
 - (b) Lower bamboo transition forest.
 - (c) Malacantha forest.
 - (d) Malacantha and Entandrophragma forest.
4. High Montane Conifer Forest.
5. Savanna Woodland.

1(a). *Alpine Elfin Woodland—Upper Moorlands.*

This zone from 11,500 feet to the summit is characterised by the absence of all bush and tree growth, with the exception of the two arborescent *Senecios*, *Senecio gardneri* and *S. elgonensis*. The former species only occurs above 12,500 feet, but the latter certainly grows at 10,000 feet, and possibly below that altitude. Both species attain a height of 25 feet. The phallic-shaped *Lobelias*, though not woody, are remarkable. The vegetative form resembles a cabbage, but the robust flowering spikes are sometimes six feet tall. The shaggy *L. telekii* is widely spread above 11,000 feet, but *L. elgonensis* seems confined to swamps above 11,500 feet and to take the place of *L. aberdarica* at those altitudes. The low woody bush or herb, *Alchemilla argyrophylla*, is common in the lower part of this zone, more particularly in the crater. It is about one foot high only, but occurs in extensive masses. Small *Helichrysums* are common throughout.

1(b). *Alpine Elfin Woodland—"Heath" Zone.*

"Heath" is something of a misnomer, as the commonest and most striking woody plant is the Composite, *Stoebe kilimandscharica*. However as this is associated with heaths and is usually mistaken for one the name had better stand.

The upper and lower limits though shown on the map as 11,500 feet and 10,000 feet, are in reality far from well defined. Trees such as *Hagenia* often occur at 10,500 and even at 11,000 feet. They will be considered in the next zone. These lower moorlands are partially inhabited by a cattle and sheep-owning people, who are an administrative and forestal problem. The alpine bred cattle cannot survive at lower altitudes in tick-infested country, and the burning of the moorlands and forest glades for grazing is not in the best interests of the forest.

The chief woody constituents of this sub-formation are: *Stoebe kilimandscharica*, *Philippia johnstoni* (and/or *P. elgonensis* and *P. excelsa*), *Erica arborea*, *Anthospermum whyteanum*, *Senecio elgonensis*, and *S. amblyphyllus*. Both the heaths, the *Erica* and the *Philippia*, grow to thirty feet at their lower limit of the zone. The two tree *Senecios* when grown amongst thick heath are thin leaved. This character is retained at 9,000 feet (the lowest limit of the species, cf. *S. cheranganiensis*), where the species only grow in stream valleys and open swamps. The *Philippia* grows as a small bush at 11,500 feet, but the *Erica* fails at a thousand feet lower.

Among the woody herbaceous flora at the lower limit of the zone are: *Hebenstreitia dentata*, *Artemesia afra*, *Hypericum* spp., and *Nidorella veronioides*.

1(c). *Alpine Elfin Woodland—Upper Bamboo Transition Forest.*

This zone is somewhat indefinite. Between 9,500 feet and 10,500 feet is something of a no-man's land, with "heaths," bamboo, and various timber species striving for dominance. One does not on Elgon emerge abruptly from bamboo forest into heathland, as one does in many parts of the Aberdares. In glades with a poor soil cover heath species are to be found as low as 9,000 feet. Normally the bamboo thins out above 9,500 feet, and small timber trees occur to a greater or lesser degree. The timber trees may be placed in two categories: one of those that thrive, and the other of those trees whose altitudinal optimum is much lower. In the first class are *Hagenia anthelmintica*, whose timber is of some merit, *Dombeya goetzenii*, which also grows quite happily at 7,500 feet, *Pittosporum abyssinicum*, *Cornus volkensii*, and less commonly *Faurea arborea* and *Agauria sailcifolia* var. *pyrifolia*. In the second class are *Podocarpus milanjanus*, *Olea hochstetteri*, *Pygeum africanum*, *Ilex mitis* var. *kilimandscharica*, and *Cassipourea elliottii*, but the commonest tree is undoubtedly *Rapanea neurophylla*, which is usually not more than 25 feet high.

2. *Montane Bamboo Forest.*

The bamboo, *Arundinaria alpina*, occurs on Elgon between 7,000 feet and 10,000 feet, but does not grow gregariously below 8,000 feet. Above 9,500 feet height growth falls off, and as stated above timber species are intrusive. It will be seen on the accompanying map that I have in the East shown the bamboo belt as between 9,000 feet and 10,000 feet. The bamboo is far less dense on this side of the mountain, and though it is to be found at 8,000 feet it occurs in clumps and patches and is by no means dominant. Bamboo must need a rainfall of over fifty inches to develop luxuriantly at this altitude. In the North the bamboo only occurs in restricted patches. In the South and West the bamboo belt is fairly "solid" from 8,000 feet. The plant is not a particularly attractive commercial proposition, but as a conserver of water supplies it is first class. Large timber trees are often to be found in the belt. In the north-east *Podocarpus gracilior* is not uncommon, but in wetter parts *Podocarpus milanjanus* is the commonest species. Timber trees occurring in the bamboo (often in groups) are: *Cornus volkensii*, *Dombeya goetzenii*, *Hagenia anthelmintica*, *Xymalos monospora*, *Cassipourea elliottii*, *Schefflera volkensii*, *Rapanea neurophylla*, and the small *Trichilia buechananii*.

Every fifteen years or so the bamboo flowers and dies. Though it dies in patches it happily does not do so all over the country as do some Indian species. Nevertheless the patches

are large enough to raise the ire of the uninitiated, who assign the cause to careless use of fire. These dead patches usually become covered with a strong growth of brambles, mixed with such species as *Hypericum leucoptychodes*, *Lobelia gibberoa*, and *Impatiens* spp. I imagine that the odd timber trees found in the bamboo seed themselves in this period.

3 (a). Upper Montane Forest—Mixed Pygeum Forest.

The change from the *Malacantha* forest (3c) is not so abrupt as I have shown on the map. The forest from Bulago to beyond Sipi is transitional. It is not so well marked as that between the *Ocotea* and coniferous forests on the Eastern Aberdares and on West Mt. Kenya, where stands of pole *Cassipourea elliottii* occur. That species is however plentiful. Other common species are *Albizzia gummifera* (the *Albizzias* do not go further north), *Ekebergia rueppelliana*, *Allophylus abyssinicus*, *Syzygium guineense*, *Pygeum africanum*, *Xymalos monospora*, *Casearia battiscombei*, and *Rapanea neurophylla*.

The typical forest from beyond Sipi to the Kiriki (Greek) river is good in parts. Excellent patches of the two most typical trees *Pygeum africanum* and the Elgon Olive, *Olea welwitschii*, are to be found. Other than these two species the commonest trees are *Ekebergia rueppelliana*, *Allophylus abyssinicus*, *Lachnophyllis congesta*, *Dombeya goetzenii*, *Rapanea neurophylla*, *Podocarpus milanjanus*, *Olinia usambarensis*, *Teclea nobilis*, *Euphorbia* sp., *Neoboutonia macrocalyx*, and *Polyscias kikuyuensis*. At higher altitudes, from 8,500 feet and 9,000 feet, *Ilex mitis*, *Hagenia anthelmintica*, *Olea hochstetteri*, *O. chrysophylla*, and *Pittosporum abyssinicum* appear, but not in any quantities. Small trees and shrubs which occur are: *Halleria lucida*, *Scutia myrtina*, *Pavetta silvicola*, *Lasiosiphon lampranthus* (on rocks), *Gymnosporia* spp., *Dombeya nairobiensis*, *Bersama abyssinica*, and *Catha edulis*.

The good cedar that is supposed by some to exist on this part of the mountain is a myth. Odd trees can be found in the Kaburon district to the north-east, but more particularly below the forest line. Within the forest, cedar, *Juniperus procera*, is commonest in the upper valley of the North Sit river. I imagine that if cedar forest ever occurred that it grew from 5,000 feet to 7,000 feet, and that it was burnt out by graziers very many years ago.

3(b). Upper Montane Forest—Lower Bamboo Transition Forest.

Malacantha, the Mwiruni of the Bagishu, does not grow usually above 7,500 feet. The transition zone (not shown on the map), lies between that altitude and the lower edge of the

bamboo, in the South and the South-West. In the South in the neighbourhood of the Lwakaka river there is a very striking stand of *Macaranga kilimandscharica*, but I do not know how far eastwards it extends. Associated with the *Macaranga* are *Conopharyngia holstii*, *Xymalos monospora*, *Allophylus abyssinicus*, and *Trichilia buchananii*. In the South-West and in the highest part of Nkokonjoro the *Macaranga* though well represented is less obvious. The most striking plant is the tree fern, *Cyathea deckenii*, which occurs in patches on the hill slopes, thus demonstrating the heaviness of the rainfall in this part of the mountain. Bamboo occurs in restrained patches and the other trees to be found are: *Neoboutonia macrocalyx*, *Xymalos monospora*, *Hagenia anthelmintica*, *Pygeum africanum*, *Schefflera volkensii*, *Cassipourea elliottii*, *Trichilia buchananii*, and *Allophylus abyssinicus*.

3 (c). Upper Montane Forest—*Malacantha* Forest.

Malacantha sp. nr. *M. alnifolia* (late *Cola* sp., and *Sideroxylon adolfi-friederici*) is the Muna of the Akikuyu. It is a hygrophilous tree of large size, growing between 5,000 feet and 7,500 feet, and may represent one quarter of the stand of timber trees in some parts of this sub-formation. Associated trees are: *Syzygium guineense*, *Neoboutonia macrocalyx*, *Alangium chinense*, *Casearia battiscombei*, *Strombosia grandifolia*, *Pygeum africanum*, *Allophylus abyssinicus*, *Croton macrostachys*, *Polyscias fulva*, and/or *P. kikuyuensis*, *Albizia gummifera*, *Conopharyngia* sp., *Schefflera abyssinica*, and less commonly *Fagara macrophylla*, *Bosquiea phoberos*, *Olea welwitschii*, *Ekebergia rueppelliana*, *Anthocleista* sp. (possibly *A. pulcherrima*), *Albizia zygia*, or *A. grandibracteata*, *Podocarpus milanjanus*, and *Kigelia aethiopica*.

This type of forest stretches from the Sosia river in the South-East to near Sipi in the West. The nearer the sub-formation is to its lateral limits the more likely is it to be found confined to the lower slopes of valleys. A small area of forest on the northern slopes of the ridge, South of Kyesoweri, in N.E. Mt. Elgon, is included in this sub-formation. It must be a localised area of heavier rainfall. Elgon Olive and *Pygeum* are well represented but both the *Malacantha* and the *Casearia* are present. *Cassipourea elliottii*, *Allophylus abyssinicus*, *Ekebergia*, and the *Neoboutonia* are also common.

3 (d). Upper Montane Forest—*Malacantha* and *Entandrophragma* Forest.

This type of forest might conceivably be classified as Lower Montane, but as almost the only difference from 3(c) is the presence of a species of *Entandrophragma*, a major difference in

classification would be silly. The *Entandrophragma* grows into a colossal tree, but does not appear to grow above 7,000 feet in altitude. The tree occurs in restricted localities, chiefly stream valleys, from the Muyembe valley in the North-West to Segururu hill in the South-West. This type of forest probably covered most of Bugishu at one period.

4. Higher Montane Conifer Forest.

This forest formation is characterised on Elgon by *Podocarpus gracilior*. Though this species occurs South of the Kererr (Samaki) river, below the forest line, the forest itself does not become coniferous until the northern slopes of the Bukwa valley are reached. The change is quite sharp. The Podo forest runs as far south as the Kibusi river. The other timber trees of this type of forest are: *Ekebergia rueppelliana*, which grows to a very large size; *Olea welwitschii*, in somewhat restricted localities; *Teclea nobilis*, *Celtis kraussiana*, *Olinia usambarensis*, *Lachnopylis congesta*, *Dombeya goetzenii*, *Rapanea neurophylla*, *Cassipourea elliottii*, *Allophylus abyssinicus*, an occasional *Olea hochstetteri* and *Ilex mitis*, and in some places *Olea chrysophylla*. At high altitudes *Cornus*, *Pittosporum*, *Xymalos*, *Hagenia* and *Schefflera volkensii* appear. Wych hazel, *Trichocladus malosanus* is common in some places below 8,000 feet, whilst above that altitude bamboo occurs.

The forest in the Bukwa, Suam, Kaptega, and Chepchoina valleys differs from the typical in that the Podo and the Elgon Olive in an undergrowth of Wych Hazel are mixed with *Maba abyssinica*, *Croton macrostachys*, *Ochna holstii*, and *Olea chrysophylla*. This sub-type probably does not go higher than 7,500 feet. The other trees of the formation of course occur.

5. Savanna Woodland.

This heading for the purpose of this paper covers the woody vegetation on the lower slopes of the mountain below the forest line.

In Bugishu there is exceedingly little tree growth of any sort left on the lower slopes. In recently cleared areas the protected *Malacantha* has been left. Elsewhere the trees that survive are either useless, such as figs, *Erythrina tomentosa*, *Cussonia spicata*, and *Spathodea nilotica*; are protected, e.g. *Albizia coriaria*, and *Markhamia platycalyx*; or are favoured for honey production, e.g. *Garcinia buchananii*, *Ehretia* sp., *Croton macrostachys*, and possibly *Alangium chinense*. Fuel is obtained from fast growing herbs and shrubs, usually on fallow land. The common species are: *Vernonia amygdalina*, *Maesa lanceolata*, *Cassia didymobotrya*, and possibly *Acanthus arboreus*. Much of the fuel comes from agricultural waste.

On the rest of the mountain besides the remnants of the forest flora, chiefly along streams, there is a fire resistant savanna tree growth. At Sipi from 6,000 feet to 7,000 feet the scrub is of a wet type and the following plants are to be found: *Entada abyssinica*, *Acacia seyal*, *Ekebergia rueppelliana*, *Coleus barbatus*, *Ocimum rothii*, *Vangueria* sp., *Vernonia holstii*, *Schrebera* sp., *Acanthus arboreus*, *Erythrina tomentosa*, *Dombeya nairobensis*, *Cassia didymobotrya* *C. petersiana*, *C. singueana*, *Maesa lanceolata*, *Bersama engleriana*, *Clerodendrium johnstonii*, *C. rotundifolium*, *Sapium ellipticum*, *Albizzia zygia*, *A. gummifera*, *Schefflera abyssinica*, *Buddleja polystachya*, *Ehretia* sp., *Abutilon zanzibaricum*, *Phytolacca dodecandra*, a candelabra *Euphorbia*, and bracken.

Corresponding with the change in the type of forest the savanna flora from Sipi to Sabei also changes. The *Entada*, *Sapium*, *Schrebera*, *Erythrina*, *Acacia seyal*, *Cassia petersiana* and *singueana*, and the *Ekebergia* are still represented but the following appear (6,000-7,000 feet): *Vitex cuneata*, *Cussonia arborea*, *Flacourtia hirtiuscula*, *Hymenodictyon floribundum*, *Rhus abyssinica*, *R. incana*, *Syzygium mambwaense*, *Combretum gueinzii* subsp. *splendens*, *Carissa edulis*, *Euclea* sp., *Faurea speciosa*, *Trimeria bakeri*, *Strychnos* sp., *Dodonea viscosa*, *Combretum binderanum*, and *Osyris abyssinica*.

The country gets still drier from Sabei to Kaburon (in the North-East). *Gymnosporia senegalensis*, *Euclea* sp., *Combretum gueinzii*, *Acacia seyal*, *Rhus incana*, *Hymenodictyon floribundum*, the *Osyris* and *Erythrina tomentosa* are the commonest species. *Dombeya quinqueseta* appears: Cedar is to be found near Kaburon; and also there near the forest line the flat topped *Acacia lahai* is a feature of the landscape.

From Kaburon to Kyesoweri between 6,000 and 7,000 feet the country becomes a little wetter. *Celtis kraussiana* and *Podocarpus gracilior* appears in some of the valleys, and *Cordia abyssinica*, *Croton macrostachys*, *Maesa lanceolata*, and *Coleus barbatus* are common in the grasslands, mixed with typical species such as *Combretum gueinzii*, *Cassia singueana*, *Rhus incana*, *R. abyssinica*, *Acacia seyal*, and the *Entada*, *Erythrina*, and the *Hymenodictyon*.

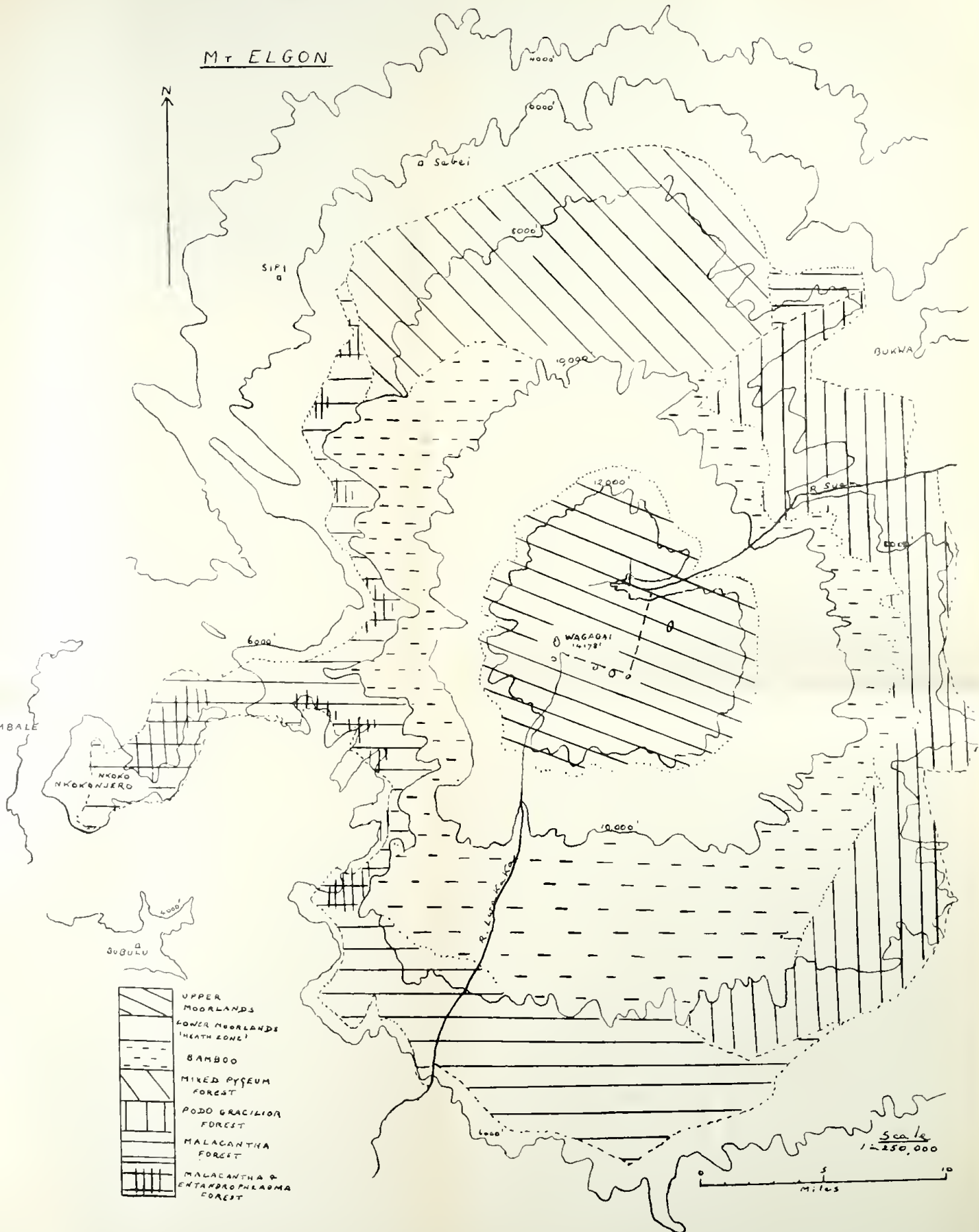
The savanna along the East of the mountain below the forest line from Bukwa southwards is fairly constant. The commonest species are: *Combretum gueinzii* subsp. *splendens*, *C. binderanum*, *Terminalia spekei*, *Cassia singueana*, *Acacia seyal*, *A. macrothyrsa*, *Heeria reticulata*, *Entada abyssinica*, *Gymnosporia senegalensis*, *Croton macrostachys*, *Dombeya quinqueseta*, *Lannea barteri*, *Bauhinia thonningii*, *B. fassoglensis*, *Rhus in-*

cana, *R. natalensis*, and less commonly *Faurea speciosa*, *Protea madiensis*, and *Ximenia americana*.

On the South the land slopes away to the warmer and wetter N. Kavirondo country and the typical Eastern Province of Uganda savanna becomes dominant. This flora is not markedly different from the preceding one. *Combretum binderanum*, *C. gueinzii* subsp. *splendens*, *Terminalia spekei*, *Vitex cuneata*, and *V. fischeri* are perhaps the commonest trees, and the following are represented: *Cussonia arborea*, *Steganotaenia araliacea*, *Rhus incana*, *Stereospermum kunthianum*, *Heeria reticulata*, *Grewia* spp., *Bauhinia thonningii*, *Flueggia microcarpa*, *Annona chrysopylla*, *Lannea barteri*, *Erythrina tomentosa*, *Euphorbia tirucalli*, *Bridelia ferruginea*, *Gymnospria senegalensis*, and *Gardenia jovis-tonantis*.



THE FOREST TYPES OF MOUNT ELGON.



OBITUARY.

G. L. R. HANCOCK, M.A., F.R.E.S., F.Z.S.

It is with deep regret that we have to record the death of G. L. R. Hancock which occurred at the European Hospital, Kampala, on July 3rd. He had been ill for some time starting with an operation for appendicitis, after which complications ensued culminating in pneumonia. His condition improved a few weeks ago and the writer had a pleasant chat with him in hospital when he was looking forward to a recuperative period at Limuru and being able to visit the Croyndon Museum.

George Hancock was in the late thirties and was educated at Harrow and Cambridge University. Throughout his undergraduate days he was keenly interested in entomology and took part in the Cambridge University Expedition to Brazil during one long vacation. He also published several short papers on British Ichneumons and allied groups. About 1926, he was appointed Assistant Agricultural Entomologist to the Uganda Government, and entered upon his work with his usual enthusiasm. A great part of his work was in connection with cotton pests and he published a valuable paper in the *Uganda Journal* on the notorious "cotton-stainers" (*Dysdercus*). His work was not confined to the agricultural side of entomology and in conjunction with Mr. G. H. E. Hopkins he did a great deal of work on mosquitoes, including a preliminary survey of the aquatic insect fauna of certain portions of Lake Victoria. Hancock had a love for mountains and made collecting trips on Elgon, Ruwenzori, and Kenya. Very interesting accounts of the expeditions to Elgon and Ruwenzori have been published in this *Journal*. Many new species were discovered and valuable observations made. A few years ago Hancock relinquished his appointment and took on a new post which had recently been created at Makerere College. This was tutor and lecturer in Biology and he entered upon this new job with his usual keenness. During his last leave a few months ago he purchased complete equipment for a small museum which he was starting at the college for the benefit of the students.

The writer frequently stayed with George Hancock in Kampala and accompanied him on many collecting excursions which will be very greatly missed. George was a great talker

and it was impossible to be in his company without being affected by his great enthusiasm for anything connected with Biology. Only recently we had been considering the production of a joint-paper on the African species of *Dysdercus* as a whole to supplement his previous paper which had dealt only with the economic side.

Hancock joined the East Africa and Uganda Natural History Society in 1926 and was a fellow of the Royal Entomological Society and the Zoological Society of London.

He was unmarried and we extend our sympathy to his father, Canon Hancock, who survives him.

A. F. J. GEDYE.

THE TWENTY-NINTH ANNUAL REPORT, BALANCE SHEET AND FINANCIAL STATEMENT OF THE EAST AFRICA & UGANDA NATURAL HISTORY SOCIETY:

for the year ending December 31st, 1939.

The close of the year 1939, marked the thirtieth year of the Society's existence, a record equalled by few, if any other Society in Kenya. Members are aware, that under the original Constitution, one of the main objects of the Society was the inauguration and building up of a Museum worthy of the vast, and hardly explored field of Natural Science within Kenya and Uganda. From a very small beginning, this endeavour rapidly outgrew the capacity of the small building rented by the Society, and we were able in 1920, to erect more commodious premises in Kirk Road, which building we occupied up to 1929, when, by agreement with the Government and the Trustees of the Coryndon Memorial Fund, we transferred our activities to the Coryndon Memorial building on Ainsworth Hill.

In spite of adverse circumstances, financial depression etc., there has at no time been any retrogression; on the contrary the Museum has expanded, until in 1938, it became obvious that this particular activity had outgrown the limited finance and organisation of a small Society. The growth and expansion was, in no small measure, due to the generous financial assistance which the Society received from Government, the Nairobi Municipal Council, the Carnegie Corporation, and private individuals. There was, however, just that lack of organised representation which is indispensable toward an assured degree of necessary financial support. Submissions made to Government in this matter resulted in the appointment of a Committee of Enquiry, and subsequently of an interim advisory Committee, one outcome of which was the introduction, and passage of a Museum's bill through Legislative Council, by which means a Museum's Trustees Board was established, the primary object of which was to take over the museum organised by the Natural History Society.

The year under review records an important milestone in the history of museum organisation in Kenya, for after lengthy discussion and negotiations the Society formally transferred its museum assets, collections and exhibits, to the Museum's Trustees of Kenya, in November, 1939, retaining only the library and library equipment.

It is unnecessary to enter into details regarding these negotiations; the Deed of Transfer can be referred to by any

member on application to the secretary or librarian. Briefly, the Trustees will pay to the Society, a nominal sum of £1,500, payable in fifteen equal yearly instalments of £100, and the Society has undertaken to assist the Trustees financially, by contributing a sum of £50 per annum toward maintaining the Museum during the period in which instalments are payable. The interests of the Society are safeguarded by appropriate clauses in the deed. The association of the Society with the Museum will still be maintained in that two nominees of the Society are members of the Board of Trustees; these members are Dr. van Someren, and Dr. Leahey, acting for Mr. Champion.

The thanks of the Society are due to the members of the Executive Committee and the Museums Trustees, for having brought the negotiations to a successful issue.

The Headquarters of the Society will still remain in the Coryndon Museum, and members will continue to enjoy all those privileges in connection with the Museum which they have hitherto obtained.

Turning now to matters of more intimate association with the Society, and less public interest, we have to record that your Executive Committee met on seven occasions for the purpose of conducting ordinary and special business; we regret however, that Dr. van Someren found it necessary to resign from the office of Vice-President, thus severing a connection with the Executive of the Society, which has been continuous for the last twenty-seven years. You are all aware of the major part which Dr. van Someren has taken in the building up of the Society and the development of the Museum, and it is appropriate to record here, a special vote of thanks for his services to the Society and to Science in Eastern Africa over a period of nearly thirty years.

We also regret to record the resignation of Mr. H. Slade, who has acted, for several years, in the capacity of Honorary Solicitor to the Society. We should like to take this opportunity of passing a vote of thanks to Mr. Slade for the great service he has rendered to the Society in the past.

A memorial clock has been erected in the main hall of the Museum by the Misses Mathews and Mr. Percy Wyndham, to the memory of the late Arnold Mathews. Mr. Mathews was one of the original members of the Natural History Society, and was keenly interested in the Flora and Fauna of East Africa, and the continuance of scientific research in this respect.

The Society record with deep regret, the death, in the latter part of the year, of Mr. Ernest Carr, who for many years was a life member. Members will recollect that Mr. Carr not only

inaugurated, but entirely financed the botanical section of the Museum for three years, from the time that the Society took up its quarters in the Coryndon Memorial building. But for this most generous gesture on the part of Mr. Carr, the serious botanical work of the institution could not have been undertaken.

The membership has been maintained throughout the year, but I would remark, *en passant*, that several resignations were received during December, for 1940. This is unfortunate in many ways, more particularly now that by the new constitution, the annual subscription is reduced to Shs. 20/- vice Shs. 30/- which previously obtained. Every endeavour must be made, not only to keep up our membership, but to increase it, especially amongst the younger folk of Kenya. I should like to suggest that the incoming Committee should look into this matter, and take steps toward this end.

LECTURES.

Two lectures were delivered during the year, to which the public were invited. The first of these was given by Dr. Leakey, and dealt with the early changes in climate and geography, with particular reference to Mombasa Island and Lake Victoria since the time of earliest Man. The second talk, given by Mr. Cunningham van Someren, dealt with an introduction to the Orchids of Kenya; this lecture was illustrated with diagrams, photographs and living plants. Both lectures were fairly well attended, but larger audiences would be appreciated by all concerned. We take this opportunity of thanking the authorities of the Scott Agricultural Laboratory, for their kindness in lending their epidioscope for the second lecture.

LIBRARY.

The Library was greatly added to by exchange with other institutions, and a number of new exchanges have been entered into. Our thanks are due to Dr. and Mrs. MacInnes for the excellent manner in which they have carried out the duties of part-time librarian.

PUBLICATIONS.

In accordance with the new constitution, steps were taken to publish four Journals during the year. Two numbers were of increased bulk, and embodied papers dealing with some of the results of the Chyulu Expedition, undertaken by members of the Museum staff in 1938. These sections are the fore-runners of a series of papers which will appear from time to time as the material is worked out. We are glad to report that the Museum's

Trustees have agreed to recognise our Journal as the official organ of the Coryndon Museum, thus we are assured of several MSS for future issues. The Journals have been freely illustrated, and at very considerable cost, but toward this we have received generous donations, and further financial assistance has been promised. I should like to point out that the majority of the blocks and prints were prepared in England, to assure the fine detail required in this type of reproduction, and in consequence some increase in expense has had to be met.

I should like to mention here, that we have recently received some criticism of the restricted scope of the Journal, the complaint being that it was not scientific enough! I would suggest that the complaint was intended to indicate that it did not cover a wide enough field. The remedy for this defect, if defect it can be called, surely lies within the hands of members themselves. If the scope is to be widened, then a greater number of members must contribute, and thus a wider range of interests will be covered. We would assure our readers that present contributors have not been given a monopoly, and the Publication Committee will welcome an influx of MSS.

DONATIONS TO THE MUSEUM.

Members have continued to support the Museum by donations of material, but as we are no longer actually concerned with the activities of the Museum, we hope that the Director, Dr. van Someren, will supply us with a copy of his report for the year, so that members can see a list of the additions to the study collections. We hope that this support will continue.

FINANCE.

The Financial Statement and Balance Sheet has been prepared and audited, and is now before the meeting. But before considering this I should like to express the thanks of the Society to Mr. Amin of Graham Dawson & Co. for his kindness in assisting with the accounts and preparing the financial statement for audit.

BALANCE SHEET AS AT 31st DECEMBER, 1939.

[illegible]

We have compared the above Balance Sheet with the Books and Papers of the Society, and certify same to be in accordance therewith.
No Depreciation has been allowed for on Library Books and Journals of the Society.
For GILL & JOHNSON,
Nairobi, (Sgd.) L. GILBERT, F.S.A.A.
18th January, 1940.

or GILL & JOHNSON,
(Sgd.) L. GILBERT, F.S.A.A.

REVENUE & EXPENDITURE ACCOUNT.

EXPENDITURE.		REVENUE.	
1939.	Shs. cts.	1939.	Shs. cts.
Dec. 31.		Dec. 31.	
To Librarian's Salary (9 months)	900 00	By Subscriptions	6,815 00
" Postages	390 85	" Donation—Dr. van Someren	400 00
" Free Issue of Journal to Members	1,200 00	" (Journal Publication Fund)	
" Periodicals	438 50	" Interest	124 99
" Stationery, etc.	97 75		
" Members' Accounts written off	540 00		
" Sundry Expenses	94 25		
" Accountancy & Audit	100 00		
" Subscription to Museum.			
" (As per Agreement)	1,000 00		
" Bank Charges	22 68		
" Depreciation—Furniture 10%	200 00		
" Excess Revenue over			
Expenditure	2,355 96		
	Shs. 7,339 99		Shs. 7,339 99

SUNDRY CREDITORS.

	Shs. cts.
Librarian's Salary	100 00
Wm. Dawson & Son, Limited	30 00
E.A. Standard Limited	2,350 75
J. A. Sinclair, Limited	2,049 00
Dr. W. Junk	145 00
Gill & Johnson	100 00
	Shs. 4,774 75

SUNDRY DEBTORS.

	Shs. cts.
Nieuweniss	50 00
David Nutt	34 00
Jackson, Son & Co.	18 00
N. M. Forbes	1 00
R. B. Janson	176 00
Bailey Bros.	24 00
	Shs. 303 00

EAST AFRICA AND UGANDA NATURAL HISTORY SOCIETY.

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Journal No. 3	...	Shgs. 20/-	Journal No. 30	...	Shgs. 10/-
" " 8	...	" 10/-	" " 31/32	...	" 7/50
" " 13	...	" 20/-	" " 33/34	...	" 7/50
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" " 23	...	" 5/-	" " 47/48	...	" 7/50
" " 24	...	" 5/-	" " 49/50	...	" 7/50
" " 25	...	" 5/-			
" " 26	...	" 6/-	Vol. XII, Parts 1—6, each	"	7/50
" " 27	...	" 6/-	Vol. XIII, Parts 1 & 2, each	"	20/-
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The Journal

OF THE

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(MUSEUMS TRUSTEES OF KENYA).

May, 1941.

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J. RICHARD HUDSON, B.Sc., M.R.C.V.S.

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NOTES ON THE BUPRESTIDAE (COLEOPTERA) OF
EAST AFRICA.⁽¹⁾

BY ANDRE THERY,

Attaché to the Museum National d'Histoire Naturelle, Paris.

This study of the *Buprestidae* of Kenya Colony and other parts of East Africa has been made possible through the kindness of Mr. A. F. J. Gedye, of the Coryndon Memorial Museum, Nairobi, who has submitted to me a great number of interesting species. I wish to thank the authorities of the Coryndon Museum for allowing the types of new species described to be retained by the Paris Museum. It is not my intention to give a complete list of the *Buprestidae* of Kenya Colony, etc., as many more still remain to be discovered. The present work is only a contribution to the study of this fauna pending the acquisition of further material when it may be possible to compile a complete catalogue.

This paper is the second written by me concerning the *Buprestidae* of Kenya Colony. The first was recently published in "Mission de l'Omo, Zoologie, V" (Mem. Museum Nat. Hist., N.T. IX, p. 273).

LIST OF SPECIES.

1. ***Sternocera castanea druryi***, Waterh.
Ann. Mag. Nat. Hist., XIV, 1904, p. 247.
(Type Locality: Upper Nile, Sudan.)
Kenya Colony: Ferguson Gulf, Lake Rudolf (D. R. Buxton).
2. ***Sternocera castanea irregularis***, Latr.
Voy. Caillaud, IV, 1923, 276, p. 4, pl. 1, f. 1.
(Type Locality: Nubia.)
Kenya Colony: Ferguson Gulf, Lake Rudolf (D. R. Buxton).

⁽¹⁾ Mon. Thery has written his manuscript in English and it has been sent to me with the request that I make any necessary alterations. In so doing I have found it advisable to rewrite certain passages and sometimes to substitute certain words. I have endeavoured to cause no alteration in the author's original meaning.—A. F. J. GEDYE.

3. **Amblysterna natalensis johnstoni**, Waterh.

Proc. Zool. Soc., London, 1885, p. 123, pl. 15, f. 4.

(Type Locality: Kilimanjaro.)

Kenya Colony: Rabai, Nov.-Dec., 1933. A green variety with the apex of the elytra blue (Dr. van Someren).

4. **Amblysterna semi-impressa**, Fairm.

C.R. Soc. Ent. Belg. (1891), p. 279.

(Type Locality: Between Somaliland and Masailand.)

Kenya Colony: Thika (A. F. J. Gedye) Hola, Tana River (MacArthur) Lower Tana-Sabaki (Turner-MacArthur).

5. **Paracastalia ornatipennis**, Kerr.

Mon. Bup. T.I., 1905, p. 412, pl. 74, f. 5.

(Type Locality: Lindi, Zambezi, Zanzibar.)

Kenya Colony: Sokoke (H. J. A. Turner) Lamu I. (H. J. A. Turner).

6. **Acmaeodera keniensis**, n.sp. (Plate 10. Fig. 1.)

Length: 10 mm. Width: 1.8 mm. Male. Elongate, sub-parallel at middle, feebly depressed. Forehead, pronotum and elytra clothed with rather long, semi-erect pubescence, brown in the middle and white on the sides. Entirely black with small rounded yellow spots regularly disposed. One small spot in each posterior angle of the pronotum and a similar one in the middle of the base; each elytron bearing twelve small spots symmetrically disposed; clothed below with greyish pubescence. Head feebly convex, punctuation umbilicate, regularly disposed. Epistoma very oblique in the front, largely sinuate, lateral branches prolonged to the middle of the inferior margin of the eyes and forming a wrinkle where the first antennal joint arises. Eyes feebly projecting, rather large, irregularly oval. Forehead a little broader than long; sides a little divergent towards the vertex.

Antennae medium-sized, the third joint slightly longer than the second and the fourth. Pronotum one and three-fourths as wide as long, the anterior margin rather strongly and regularly projecting, widest at middle; sides strongly and regularly arcuate, marginal carina entire, feebly arcuate, with the anterior angles slightly acute and rounded at apex; posterior angles very obtuse; feebly impressed at apex. Base nearly truncate. Surface rather finely, regularly, densely, and feebly punctate at middle. Pronotum becoming wrinkled at the sides, the wrinkles nearly superficial and parallel to the lateral margins. Middle of the disc indistinctly and longitudinally impressed, with a depression at each side close to the base, not

far from the angles. Elytra nearly as wide as pronotum at base, shoulders thick, sides slightly and arcuately constricted from the shoulders to the posterior third, arcuately attenuate apically, tips conjointly rounded and finely denticulate. Lateral margin rather widely and angularly emarginate behind the shoulders. Surface very deeply punctato-striate, intervals large, very convex, indistinctly punctate. Legs short, very pubescent, tibia straight, anterior ones a little enlarged at apex. Tarsi short, claws strongly dentate. The female differs from the male in having the anterior margin of the pronotum less prominent.

Kenya Colony: Meru (Butler) Jan., 1936. Described from two examples (male and female) holotype and allotype collected in the same locality and from paratypes (one male and three females) submitted by the Imperial Institute of Entomology.

7. ***Acmaeodera argentosa*, n.sp.** (Plate 10. Fig. 2.)

Male. Length: 6.4 mm. Width: 2.1 mm. Form rather elongate, strongly convex, subcylindrical, moderately attenuate posteriorly, regularly declivous behind and above, and nearly straight below, when viewed in profile aeneous above, elytra with the posterior quarter yellow with some brownish spots, three anterior quarters aeneous, studded with bronze, silvery and bluish spots, sides with some yellow spots along the lateral margins. Pubescence sparse above, white below.

Head feebly convex, vertex narrowly and longitudinally grooved; surface poorly and sparsely punctate, punctures umbilicate; pubescence rather long, white and erect, intervals between the punctures smooth. Epistoma broadly and feebly emarginate in front, with the lateral lobes large. Antennae serrate from the fifth joint. Pronotum one and two-fifths as wide as long, distinctly narrower in front than behind, widest at middle; anterior margin feebly bisinuate and distinctly angulate at middle; sides sub-regularly arcuate, with a lateral sharp, very slightly sinuous carina; anterior angles rounded, posterior ones obtuse, base transversely truncate with three basal impressions, the median rather obsolete, those at each side large and very deep. Disc uneven, surface very densely and regularly punctuated, the punctures alveolar and becoming more coarse towards the sides; pubescence sparse and rather long. Elytra very convex, less wide than pronotum at middle, feebly divergent from shoulders to the apical third; arcuately attenuate to the tips which are conjointly and rather narrowly rounded; the lateral margins sharply and feebly serrate, the teeth irregular and widely separate; humeri strongly developed; surface striato-punctate, the striae quite obsolete on the first half, then strongly impressed. First half nearly equally

punctate; third, fifth, and seventh intervals more elevated posteriorly, the seventh finely serrate, very salient and overhanging the lateral margin. The intervals serially punctate posteriorly, the punctures large, less distinct at apex, the first and third intervals only irregularly punctate; from the punctures arise little semi-erect hairs, distinguishable only on the sides and along the suture. Humeral angles of the elytra projecting forward; lateral margins roundly emarginate behind the shoulders. Abdomen sparsely punctate, clothed with rather long, semi-erect cinereous hairs; intervals between the punctures smooth; last segment rounded at apex and transversely impressed. Prosternum coarsely punctate, the punctures umbilicate, apex of the prosternal process large and feebly trilobate.

Kenya Colony: Makuyu. Described from a single male (type) collected by Mr. C. D. Knight in May, 1937, and submitted by the Imperial Institute of Entomology.

The female differs from the male by its stronger form, the blue spots less distinct, the silvery spots more visible. Length: 8.25 mm. Width: 2.75 mm.

Allotype Locality: Kenya Colony: Junction of the Rivers Tana and Thika. A single specimen collected by Mon. G. Babault in May, 1915, and submitted by the Museum National d'Histoire Naturelle, Paris.

8. ***Acmaeodera soudana*, Mars.**

Ann. Soc. Ent., France, 1867, p. 49.

(Type Locality: Sudan.)

Kenya Colony: Naivasha, 1935 (H. J. A. Turner). A single specimen identified by comparison with a specimen from Thomson's collection.

9. ***Acmaeodera turneri*, n.sp.** (Plate 10. Fig. 3.)

Length: 6 mm. Width: 2.25 mm. Elongate, subcylindrical, strongly declivous towards the sides, regularly rounded posteriorly above, when viewed in profile. Head and pronotum black with a feeble aeneous tinge. Elytra black with yellow marking as follows: the base black, the two first basal thirds marbled with numerous little yellow spots, the last third almost entirely yellow on the intervals with the striae of a more brownish colour. Underside black.

Head nearly flat, with a very obsolete depression in front; interocular area scarcely wider than long with the sides subparallel; surface feebly pubescent, densely and coarsely punctate, the punctures larger in front than at the vertex, from the centre of each puncture arises an erect, inconspicuous white hair. Epistoma below the front and separated from it by a large

groove, broadly and feebly emarginate. Eyes large, subelliptic, moderately salient; antennae strong, serrate from the fourth joint, joints sub-equal except the first which is longer than the next three. Pronotum one and a half times as wide as long, widest at middle when viewed perpendicularly, one and four-fifths times as wide as long, narrower in front than at base, anterior margin broadly rounded at middle. Sides arcuately rounded; base feebly sinuous; posterior angles notched; lateral margins distinctly crenate from the middle to the edge of the notch. Surface with an obsolete depression before the scutellar region, and an oblique longitudinal one at each side; a short distance from the posterior angles, in those depressions close to the base are also round deep pits. Surface densely and very coarsely sculptured with a smooth longitudinal area at the middle, from which arise some ridges, more or less distinct, in the shape of a trefoil leaf, the rest of disc covered by large alveolar punctures more or less intermixed with wrinkles. Elytra two and a fifth times as long as wide, slightly less narrow at base than pronotum, sides slightly sinuate from humeri to behind the middle, slightly enlarged at the posterior third, then arcuately attenuate to the tips which are rather narrowly and conjointly rounded. Lateral margins moderately serrate behind; humeri strongly developed, surface of disc apparently waxy and translucent on the yellow spots. Striae strongly impressed posteriorly, with intervals flat at first and slightly grooved at apex. Punctures very coarse anteriorly becoming obsolete behind; alternate intervals stronger than the others. Fourth interval overhanging the following and the last but one more elevated than the others and concealing the lateral margin. Two external intervals distinctly serrate. Underside covered with large umbilicate punctures less distinct on the abdomen from which arise short white hairs. Posterior margin of the posterior coxa toothed at the inner edge of the femoral emargination. The female differs from the male by the antennae being less robust and the body less narrow.

Kenya Colony: Sokoke Forest.

Paratype Locality: Kenya, Lower Tana. Described from specimens collected at the type locality by Mr. A. Turner in July, 1932; allotype and paratype collected by Dr. van Someren at Ngong, Kenya.

This species is allied to *Acmaeodera ruficauda*, De Geer from Cape Colony, but can be separated by its pronotum not being entirely wrinkled; from *A. costulata*, Kerr. from the same region by the presence of punctures on elytral intervals; from *A. apiceflava*, Obb. from Natal by the presence of shining, serially placed hairs on the elytra.

10. ***Acmaeodera kaimosiana***, n.sp. (Plate 10. Fig. 4.)

Length: 5.9 mm. Width: 2.25 mm. Subcylindrical, slightly and regularly declivous posteriorly when viewed in profile. Entirely brownish black, elytra bearing some reddish spots; elytral intervals with a single row of widely separated punctures, from each of which arises a short erect, inconspicuous white hair.

Head narrower than two-thirds of the breadth of the pronotum, nearly as wide as long in front, clothed with white erect pubescence, coarsely reticulate and slightly depressed. Epistoma wide, emarginate in front, bordered anteriorly with a slight ledge. Antennae rather short, serrate from the fifth joint, the first joint elongate, the next three nearly globular. Eyes slightly projecting, converging slightly at the top, regularly oval. Pronotum twice as wide as long, widest at middle; sides very arcuately rounded with the marginal carina strong, straight, entire, anterior margin slightly bisinuate with a wide median lobe strongly projecting. Base nearly straight. Surface very uneven without distinct punctures, with a longitudinal carina enlarged in the middle, shortened in front, from which arise some transverse wrinkles, with a broad, deep, rounded impression at the middle of the base, and on each side, a similar one, more longitudinal, flat at the base, longer than the first and joining the middle of the pronotum. Rest of disc covered with irregularly arranged strong wrinkles. Elytra a little less than two and a half times as long as wide, widest behind the posterior third, distinctly less wide than pronotum. Humeral angles projecting in front; humeri feebly developed; sides nearly parallel from the shoulders to the apical third, strongly arcuately acuminate to the tips, which are conjointly arcuately rounded with the lateral margins sharply serrate from the posterior third to the apex. Surface striato-punctate, the striae strongly impressed on the disc with the punctures more distinct towards the base and the sides. Intervals serially and feebly punctured, becoming grooved behind the middle. The last but one interval (marginal one not included) very salient, overhanging the lateral margin, and equally serrate. Underside black, sparsely pubescent, shining. The punctures of the prothoracic and metathoracic episterna umbilicate. Abdomen beneath rather distinctly punctate on the basal sternites, the punctures becoming obsolete toward the apex. Prosternum convex, coarsely punctate with a short lobe in front, separated from the prosternum by a deep furrow. Anterior tibiae carinate. Last abdominal segment concave, rounded at apex.

Kenya Colony: Kaimosi, March-April, 1932 (H. J. A. Turner).

This species is allied to *A. ruficauda*, De Geer.

11. ***Acmaeodera subprasina*, Mars. (*ancilla*, Har)**

Ann. Soc. Ent., France, 1867, p. 54.

(Type Locality: Abyssinia, White Nile.)

Kenya Colony: Nairobi, Naivasha, Ol Donyo Sabuk (A. F. J. Gedye); Kaimosi, Kakamega (H. J. A. Turner); Ngong (van Someren), etc.

12. ***Paracmaeodera posticalis*, C. & G.⁽¹⁾**

Mon. Bup., 1, 1836, p. 28, pl. 8, f. 47 (female).

This very variable species was described from Senegal. According to the authors the abdomen is aeneous, but in all the specimens that I have seen the abdomen is black. Waterhouse stated (Ann. Mag. Nat. Hist., Ser. 7, Vol. XIX, 1904, p. 260) that he had examined the type of *A. posticalis* and considered it an extreme variety of *A. viridis*, Kerr. in which the abdomen is always black. The specimen captured at Makindu in December, 1933, by Mr. MacArthur seems to be a variety of *A. posticalis*, C.G. The male is blackish at the middle with the sides golden green above; black below. The female is green with the apex blue above.

13. ***Paracmaeodera puella*, Boh.**

K. Oefv. Akad. Forh., 1860, p. 19.

This species described from Lake N'Gami is not a simple variety of *A. posticalis* but a valid species. It differs from the latter in having the apical denticulation of the elytra strongly developed with the teeth widely apart and pointed; the elytra less arcuately rounded when viewed in profile, the back part of the body markedly acuminate.

Kenya Colony: Kibwezi, December, 1929 (van Someren). Three specimens.

14. ***Paracmaeodera jeanneli*, Kerr.**

Vol. Alluaud et Jeannel, VI, 1914, p. 251, pl. 4, f. 2.

Described from a single male captured at New Moshi by Alluaud and Jeannel in April, 1912. Mr. MacArthur has discovered the female at Arusha in March, 1933. The female is dark green above and black below.

⁽¹⁾ The sub-genus *Paracmaeodera* differs from *Acmaeodera* in having the pronotum largely and deeply grooved, frequent sexual dimorphism, the colouration always metallic and rarely black, the body without metallic spots, elytra always grooved with elevated interstices, and the apex of the elytra sharply serrate.

15. ***Ptychomus foudrasi franchettii***, Thèry.

Boll. Soc. Entom., Ital., LXIII, 1931, p. 104.

(Type Locality: Dancalie, Djibouti.)

Differs from the type of *P. foudrasi*, Sol. by its larger shape and its green pronotum.

Kenya Colony: Sokoke Forest (H. J. A. Turner).

16. ***Ptychomus foudrasi inornatus***, Thèry.

loc. cit., 1931, p. 104.

(Type Locality: Abyssinia.)

Kenya Colony: Tsavo, November 1936 (MacArthur). One specimen. Differs from typical *A. foudrasi* in being a small brownish form with purple reflections and without coloured stripes.

17. ***Steraspis lesnei***, Kerr.

Mon. Bup., III, 1908, p. 153.

(Type Locality: Upper Sangha.)

Kenya Colony: Kitale (van Someren); Nairobi (A. F. J. Gedye). Two specimens.

The species of the genus *Steraspis* are very difficult to determine because of their extreme variability. Names have been created according to the colour, puncturation, or slight variations in the form or size, which characters have no specific value. Some variations are met with in all species, the upper part being now green, now bronze coloured, or green with red-edged elytra. The underside may be either dark blue as in the case of *S. amplipennis cyanipes*, Thoms., or green as in *S. amplipennis Goryi*, Thoms. The species sent by Mr. Gedye shows no appreciable difference from *S. lesnei*, Kerr., being also very similar to the same author's *S. lemoulti*. Both species seem to me to show no specific difference to *S. hyenea*, Thoms., from Mozambique. I am of opinion that the *S. calida*, Har., to which Kerremans has called attention as coming from Uganda (Alluaud and Jeannel's expedition) must belong to the same species. According to that author we are to believe that the special home of *Steraspis calida* is Eastern Africa, the centre of its habitat being Uganda. Personally I have seen no genuine *S. calida* except those from the Congo and Angola. Von Harold, when describing his species, gives "inner country" (Pogge) which locality calls for an explanation. Pogge was an explorer in Angola whose scientific collections were studied by von Harold and the phrase "inner country" was often applied to those specimens for which no particular locality had been specified.

18. **Pygichaeta semigranosa villosiventris**, Fairm.

C.R. Soc. Ent., Belg., XXVIII, 1884, p. 72.

(Type Locality: Somalia.)

This sub-species differs from the type in having the whole underside clothed with long erect pubescence; the secondary costae of the elytra are frequently sub-equal to the primary.

Kenya Colony: Kitale, XII, 1932 (van Someren); Osiri, .N Kavirondo, VI, 1934 (Turner); Ngong, VII, 1934 (van Someren).

Uganda: Chua, XI, 1934 (D. R. Buxton).

19. **Agelia lordi**, Walk.

List. Col. coll. by J. K. Lord, 1871, p. 13.

(Type Locality: Herkeko.)

Two specimens have been submitted, labelled "Abyssinia."

20. **Agelia placida**, Gerts.

Jahrb. Wiss Hamburg, 1884, p. 52.

(Type locality: Kleine Aruscha.)

Kenya Colony: Lower Tana-Sabaki (Turner, 1932); Masongaleni (MacArthur, 3, 1935); Simba (MacArthur, 10, 1934); Muguu (MacArthur, 8, 1934); Tsavo (MacArthur, 10, 1934).

Tanganyika Territory: Arusha (MacArthur, 3, 1934).

21. **Agelia smythi**, n.sp. (Plate 10. Fig. 5.)

Length: 27 mm. Width: 9.5 mm. (Male.) Elongate, with sides almost parallel; entirely black except for four ivory coloured spots on the elytra.

Head slightly impressed, coarsely punctate, the epistoma and front slightly concave; eyes somewhat convergent on the vertex; antennae with the second joint broader than long, the third angulate, about three times as long as the second, the following broadly lobate and acute at apex. Pronotum broader than long, broadest slightly above the base, fairly evenly rounded at the sides and slightly contracted before the posterior angles, the latter slightly obtuse with the apex blunt; the base broadly bisinuate, median lobe rounded, disc depressed and coarsely punctate, the puncturation somewhat irregular, leaving anastomosing, smooth raised areas. Elytra a little wider at the shoulders than the pronotum, the sides straight for more than half their length, then arcuately narrowed to the apex where they are conjointly rounded, obscurely denticulate, with a small sutural spine; laterally they are marginate for four-fifths of their length, but without a distinct sutural border; the disc bears traces of costae and is irregularly rather sparsely but doubly punctate on the anterior half, fine punctures being intermingled with larger, with longitudinal lines of large punctures on the

black area between the two spots; on the posterior half the puncturation is more dense, stronger and more even. The anterior spot is separated from the base by a fine dark border; it does not touch the suture and is oblique behind; the second spots, situated behind the middle, are contiguous and are bounded by a curved line in front and by two curved lines separated by the suture behind. Prosternum finely bordered in front, the intercoxal process flat, trilobed at apex and clothed with long pubescence; the whole underside very finely punctured, the fifth sternite deeply emarginate at apex, revealing a supplementary yellow sternite, bimarginate beyond which appears a small concave plate without longitudinal carinae.

Kenya Colony: Wateita Hills, Kedai [C. Montague Smyth (type)] a single specimen; Tsavo (C. G. MacArthur). One specimen.

The female differs from the male in having the last abdominal sternite less deeply emarginate revealing only a small anal plate, in the prosternal process being not glabrous, etc.

Allied to *A. peteli*, Gory, and *A. obtusicollis*, Fairm. It is narrower and more elongate than the former, less oval, and lacks the metallic spots, the pronotum is less transverse and has its greatest width before the base instead of completely basal, also the pair of large discal foveae of *peteli* are scarcely indicated; the shape of the elytral spots is different and the last abdominal sternite of the female is quite distinctly emarginate, while it is scarcely so in *A. peteli*. From *A. obtusicollis* it differs by its smaller size, the shape of the pronotum, which in the latter species is sinuate before the posterior angles which are truncate. It differs further in the rounded shoulders without angular lobe, by the anterior spot approaching and almost touching the base, and the presence of traces of costae on the elytra. Finally in *A. obtusicollis* female the lobe of the dentate joints of the antennae is longer and rounded at the apex.

22. *Iridotaenia somereni*, n.sp. (Plate 10. Fig. 6.)

Length: 22 mm. Width: 6.2 mm. Narrow, elongate, shining, dark green bronze, with a large furrow at the sides of the pronotum, continued on the elytra, where it is more distinct and continued to apex; the base of the furrow very finely punctate and clothed with very fine, inconspicuous, russet pubescence. Cyaneous green beneath.

Head deeply sunk between the eyes; vertex finely and sparsely punctured, nearly smooth and feebly pubescent in front. Epistoma ending in a point at each side; subangularly and rather deeply emarginate. Labrum deeply emarginate and

covered with long hairs. Mandibles pubescent. Antennal cavities large, triangular; forehead narrow, constricted at the top. Eyes very large and globular. Antennae long, not reaching to the base of the pronotum. Pronotum subtrapezoidal, less than one and a half times as broad as long, bisinuate anteriorly, straightly narrowed from the base to the anterior fifth where it is slightly angular, then gradually constricted to the apex. Surface smooth, rather strongly and irregularly punctured with on each side, a large aureate furrow, smooth in the base, situated at a short distance from the margin and posterior angle, and reaching the level of the anterior third. Scutellum small, longitudinally furrowed, enlarged posteriorly. Elytra angular to the shoulders, a little wider than the pronotum at base, feebly sinuate laterally to after the middle, then lengthily and arcuately attenuate to the apex where they are separately rounded with a small tooth at the sutural angle; lateral margin acutely serrate posteriorly, the teeth widely apart except at the apex where they are very small and close. Disc without striae, coarsely and linearly punctate with the intervals very coarsely and irregularly punctate, some being reticulate. Outside of the lateral furrow, along the posterior half of the elytra, there exists a small, fairly distinct lateral carina; the interval between the carina and the furrow uniserially punctured, and the interval between the carina and the lateral margin coarsely punctured. Prosternal process carinate, nearly smooth, trilobate at apex. Intercostal process of the first abdominal segment impressed. Last segment widely and angularly emarginate (male).

Kenya Colony: Rabai. A single specimen collected by Dr. van Someren (November-December, 1933).

This species is particularly interesting because of its likeness to the Indian species of the same genus with which it is closely allied. It differs entirely from all the African species identified at the present day. A second African species of the genus *Iridotaenia*, *I. camerunica*, Thery, is very similar to *I. cupreovaria*, Waterh., from the Andaman Islands. These species show the former union of the two continents.

23. ***Evides triangularis***, Thoms.

Typ. Bup., 1878, p. 24.

(Type Locality: Zanzibar.)

Kenya Colony: Voi (MacArthur, November, 1936); Sokoke (Turner, July, 1932).

24. ***Psiloptera (Lampetis) macarthuri***, n.sp. (Plate 11. Fig. 7.)

Length: 19 mm. Width: 6.3 mm. Uniformly aeneous above with the punctures of a reddish cupreous colour. Cyaneous

beneath, the three intermediate segments of the abdomen ornamented at each side with a small, smooth, rounded steel blue area, the fifth segment with two similar elongate areas in the middle. Tarsi aeneous with greenish reflections.

Head coarsely punctate with irregular tubercles on the front. Epistoma angularly and feebly emarginate. Eyes large, sub-elliptic, somewhat converging to the top. Antennal cavities large, rounded, the upper edge well marked and salient. Antennae not reaching to the level of the middle of the pronotum, first joint short, a little longer than the fourth, the second cylindrical, as long as broad, the third a little longer than the second and a little less than the fourth, the following lobate. Pronotum widest at base, much wider at base than at apex, feebly bisinuate in front and bordered by a coarsely and irregularly punctate furrow, interrupted in the middle. Anterior angles quite rounded. Sides nearly parallel to the middle, then obliquely narrowed to the anterior angles; posterior angles protruding. Sides margined by a straight, oblique, smooth carina disappearing long before the middle of the length, this carina invisible when viewed from above. Base widely bisinuate. Surface rather regularly convex, depressed behind, with two small oblique lines in front of the scutellum; very sparsely and very irregularly punctate, with some smooth areas nearer together laterally than those in the middle. Scutellum very small. Elytra scarcely wider than the pronotum at base, humeral callosities entirely effaced; sides straightly attenuate to the apical third, then more arcuately narrowed to the tips which are obliquely truncate, without teeth. Disc deeply striate, the striae not distinctly punctate on the middle, but more so on the sides where the punctures are coarse, irregular and superficial. Elytral intervals convex, smooth or almost smooth, interrupted by numerous small rounded depressions, irregularly dispersed and finely punctate in the bottom. Prosternum feebly convex with the anterior margins nearly straight, prosternal process smooth, shining, surrounded by a deep, pubescent, marginal groove. Posterior margins of the posterior coxae obtusely dentate. First abdominal segment longitudinally furrowed between two rounded pads, the furrow continued on all the following segments, but less distinct on the two last, sides of the segments narrowly clothed with lengthy, recumbent hairs, last segment truncate at apex. Legs robust. Tarsi depressed, progressively enlarged. The female differs from the male in being larger and more robust, the shape is less cylindrical, the antennae shorter and narrower, the prosternal process without pubescence in the groove, the last abdominal segment rounded at apex, the smooth abdominal areas less distinctly rounded.

Two specimens of this species were collected at Kilamafeza by MacArthur during February, 1935.

This species can be easily distinguished from other African species of *Lampetis* by the abdominal furrow being entire, and by the steel blue abdominal areas which resemble those found in *Damarsila*.

25. **Psiloptera (*Damarsila*) stuhlmanni**, Kolbe.

Stuhl. Ost. Afrika, pt. 4, 1897, p. 202, f. 20.

(Type Locality: Mpapwa.)

Kenya Colony: Osiri, N. Kavirondo, June, 1934 (H. J. A. Turner.)

The type is described as follows: "Oberseits metallisch grün mit kupferglänzenden oder purpurfarbigen Feldchen." The specimen examined is entirely bright bronze in colour, cupreous beneath.

26. **Psiloptera (*Damarsila*) calamitosa**, Fahr.

Ins. Caffrariae, I, 1851, p. 315.

(Type Locality: Gariep superior.)

Kenya Colony: Ngong (van Someren, April-July, 1934); Sambu (MacArthur, March, 1934).

27. **Psiloptera (*Damarsila*) foveicollis gedyei**, Thery.

Bull. Soc. Sc. Nat. Maroc, 1931, p. 35.

(Type Locality: Mukaa, Kenya, in B.M. coll.)

Characterised by the absence of a finely punctate furrow on the sides of the elytra.

Kenya Colony: Homa, South Kavirondo (H. J. A. Turner, November-December, 1934).

A single specimen of an entirely red cupreous colour with the underside brightly shining.

28. **Psiloptera (*Damarsila*) lethalis oreotropha**, Obb.

Casopis, 1927, p. 126.

(Type Locality: Mount Kenya.)

Kenya Colony: Makindu (MacArthur, April, 1933).

29. **Sphenoptera (*Strobilodera*) macarthuri**, n.sp.

(Plate 11. Fig. 8.)

Length: 19 mm. Width: 6.75 mm. Dark aneneous above, the bottom of the impressions cupreous. Head and pronotum more blackish. Cupreous beneath with the first four abdominal segments ornamented near the lateral margin with steel-blue, round tubercles. Antennae black from the second joint. Head finely punctate, forehead ornamented with four steel-blue

tubercles situated in a square, of which the two anterior are subdivided into two. Carina of the antennal cavities strong and reaching the lateral angles of the epistoma. Interocular area broader than long, scarcely wider at the top than at the base. Antennae reaching the middle of the length of the pronotum, serrate from the fourth joint, second joint short, as broad as long, third joint nearly twice as long as the second, fourth joint a little longer than the third. Pronotum one and a third times as broad as long, nearly straight and delicately bordered in front, sides very feebly arcuate; base slightly sinuate each side of the scutellum. Median lobe wide, very slightly projecting and subtruncate. Sides bordered by a robust very straight elevation, entirely visible when viewed from above. Anterior angles slightly projecting; posterior ones acute. Middle of the disc with longitudinal tubercle, enlarged at middle and surrounded by fine puncturation, at each side; closer to the edge than the middle there is an arcuate superficial furrow, the bottom of which is more finely punctate and cupreous. Lateral carina surmounted by a rather narrow deep, pubescent furrow, the pubescence intermixed with white hairs. Bottom of the disc very rugosely punctate and vermiculate. Scutellum twice as broad as long, rounded at sides. Elytra as large at the base as the pronotum, slightly rounded at shoulders, strongly enlarged and widest behind the humeri, then nearly gradually narrowed to the tips which are separately truncate and briefly but distinctly tridentate. Epipleural carina entirely distinct when viewed from above. Surface with eight elevated rounded costae (scutellar one excluded), scutellar costae joining the sutural one at the anterior quarter of the length, four following and the eighth entire or nearly so, fifth and sixth shortened posteriorly. Interval between the seventh and eighth costa twice as wide as the intervals between the others, finely punctate and pubescent, the pubescence intermixed with white efflorescence; intervals between the other costae uniserially punctate. Eighth costa very much thicker than the others. Prosternum convex, finely punctate, prosternal process feebly enlarged behind the posterior coxae, slightly trilobate and rounded at apex. Posterior coxae armed with a small acute tooth, close to the internal angle which is itself acutely toothed. Abdomen very finely punctate, slightly pubescent; sides of the first four sternites ornamented with rounded steel-blue shining tubercles. Last sternite sub-truncate. Anterior tibiae straight, intermediate bluntly curved at the apical third, enlarged at top; posterior tibiae straight, emarginate along the apical internal third, armed with an obtuse spur (male).

Kenya Colony: Makindu (MacArthur, December, 1933). Two specimens.

This species distinctly belongs to the sub-genus *Strobilodera*, Fairm., and closely resembles the facies of the two already known species, *S. plagifera*, Fairm., from Mogadiscio and *S. gastonis*, Thery, from Lindi, but differs by its pronotum being without oculiform tubercles as in some species of the sub-genus *Damarsila*.

30. **Gedyella** sub-gen. nov.

Gedyella can be distinguished from the genus *Sphenoptera* by four very elevated rounded costae on the disc of each elytron (sutural and scutellar costae excluded) and by the presence of four rounded smooth tubercles at each side of the abdomen, similar to those of some species of the sub-genus *Damarsila*. The facies of *Gedyella* is very characteristic.

30a. **Gedyella decemcostata**, n.sp. (Plate 11. Fig. 9.)

Length: 16 mm. Width: 5.5 mm. Blackish aeneous with bluish tinges above, the punctures of the pronotum cupreous; underside entirely light cupreous with four steel-blue rounded tubercles at each side of the abdomen; tarsi blue; antennae black.

Head coarsely punctate, with two oblique tubercles in the middle of the front. Carinae of the antennal cavities feebly projecting; interocular area broader than long, with sides parallel. Eyes regularly elliptic, slightly projecting. Antennae short not reaching the middle of the length of the pronotum; serrate from the fourth joint, second joint short, as broad as long, third joint twice as long as the second, fourth as long as the third and longer than the following. Pronotum a little more than one and a half times as broad as long, very narrowed anteriorly, nearly straight and very delicately bordered in front; sides arcuately rounded and bordered along five-sixths of their length by a straight carina invisible from above. Base scarcely bisinuate, posterior angles acute and a little projecting behind. Disc feebly depressed at middle and indistinctly furrowed, irregularly punctate, the punctures becoming coarser at middle and towards the lateral edge. Scutellum smooth, three times as broad as long, with lateral angles acute. Elytra a little wider at shoulders than pronotum at base, widest at shoulders, then narrowed to the tips which are strongly tridentate. Epipleural carina entire, visible from above, forming a furrow along the anterior half. Disc of each elytron with four very large, elevated, rounded costae (scutellar ones excluded). Sutural costa entire, enlarged at base; scutellar costae very short; first costa entire and irregular at apex; second entire united at apex with the first, third shortened behind; fourth entire. Intervals between costae flat and smooth bordered at each side by a line

of punctures. Prosternum broad, flat, finely punctate, feebly enlarged and rounded at apex. Internal angle of posterior coxae dentate. Abdomen feebly sculptured and slightly hairy, last sternite rounded at apex; pleural margin very narrow. Tibiae straight, tarsi slightly elongate (female).

Kenya Colony: Kilio (MacArthur), November, 1934. A single specimen.

31. *Sphenoptera (Hoplistura) minuta*, n.sp.

(Plate 11. Fig. 10.)

Length: 6 mm. Width: 2 mm. Length of head: 1.8. Pronotum: 1.9. At shoulders: 2 mm. Narrow, elongate, very shining, entirely aeneous. Antennae black from the third joint; underside slightly pubescent.

Head very large, nearly as large as the elytra at the humeri; rather strongly punctate, without median tubercles. Interocular area a third broader than long. Carinae of the antennal cavities oblique, projecting, separated in front. Eyes regularly elliptic, rather small, projecting laterally, scarcely less wide than the pronotum. Antennae very little longer than the middle of the length of the pronotum, serrate from the fourth joint; second joint sub-globular, thick, scarcely longer than broad; third joint slender and one and a half times longer than the second, equal to the fourth. Pronotum scarcely wider before than behind, a little more than one and a sixth as broad as long; bisinuate and bordered in front, with a wide, rounded, median lobe. Anterior angles very feebly projecting; sides nearly parallel, bordered along three-fourths of their length by a straight delicate ridge; posterior angles slightly acute and feebly projecting behind; base distinctly bisinuate, with the median lobe fully emarginate. Disc regularly convex, puncturation umbilicate and intermingled with some simple punctures; the puncturation becoming more acen- tuated towards the sides. Scutellum large, delicately punctate, shining, convex, cordiform, slightly broader than long. Elytra two and a half times as long as the width of both; widest at shoulders; gradually narrowed to tips which are separately and very distinctly tridentate. Epipleural carina shortened from four-fifths of its length; suture elevated behind. Disc rather convex, without distinct impressions at the base; humeral callosities feebly prominent; second and third intervals projecting at apex; sides limited behind by a narrow furrow, close to the epipleural carina. Surface punctate-striate, the three first striae only, distinctly indicated. Underside feebly hairy. Chin wide, short, sub-rounded in front. Prosternum bordered by a small ridge; prosternal process feebly convex, very sparsely punctate, limited at each side by a fine stria, interrupted by some large punctures,

nearly obsolete at the apex. Metasternum feebly furrowed, middle of the posterior edge armed with two acute teeth projecting between the posterior coxae. Posterior coxae broad, sinuous posteriorly, armed with a strong very acute tooth; posterior angles of the segments rectangular, anterior angles without smooth shining tubercles; last segment sub-truncate and very irregularly denticulate, pleural edge rounded and delicately striate. Anterior tibiae feebly arcuate; intermediate and posterior tibiae slightly sinuate along the internal apical third, armed with an obtuse spur; posterior tarsi a fifth less long than the tibiae (male).

Kenya Colony: Lamu Island (H. J. A. Turner, April-May, 1916). Three specimens.

This species is closely allied to *Sphenoptera gossypii*, Cotes, from East India and the Sudan but differs by the carinae of the antennal cavities not joining in front, the head less broad, etc.

32. **Sphenoptera (Hoplistura) neglecta**, Klug.

Erm. Reis um die Erde, 1835, p. 30.

(Type Locality: Senegal.)

Kenya Colony: Rabai (van Someren, May, 1928); Lower Tana-Sabaki (Turner and MacArthur, May, 1932); Nairobi (Gedye, August, 1932).

Very common from Senegal to East Africa.

33. **Sphenoptera (Hoplistura) ardens**, Kl.

Symb. phys. No. 32, pl. III, f. 6.

(Type Locality: Arabia felix.)

Kenya Colony: Thua River (MacArthur, November, 1933). A single specimen.

34. **Sphenoptera (Hoplistura) fischeri**, Kerr.

Mon. Bup., T. IV, 1913, p. 496.

(Type Locality: German West Africa.)

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur, April-May, 1932). A single specimen.

35. **Sphenoptera (Hoplistura) decorsei**, Kerr.

Mon. Bup., T. VI, 1913, p. 543.

(Type Locality: Harar teste Thery nec. Bouchari. Ann. Mag. Nat. Hist., 1937, p. 218.)

Kenya Colony: Nyando, S. Kavirondo (Opiko, April, 1935). A single specimen.

36. *Sphenoptera (Hoplistura) obesa tanaensis*, n.sp.

(Plate 11. Fig. 11.)

Prior to the last war I compared this specimen with Thomson's type of *obesa* at the Paris Museum and recognised that it was different; unfortunately it is impossible to see this type to-day and I am unable to indicate the difference between the two forms. I shall, therefore, only give a simple description of the new sub-species without any comparison.

Length: 14.9 mm. Width: 5.5 mm. Thick, widest at shoulders, purplish black above, punctures more or less cupreous; underside steel-blue with punctures cupreous.

Head rugosely punctate, with some irregular tubercles transversely disposed between the eyes. Interocular area very much broader than long, parallel at sides; carina of the antennal cavities strongly marked. Eyes narrowed at the summit, large, projecting, but not beyond the sides of the pronotum. Antennae not reaching the anterior coxae, second joint longer than broad, third a half longer than the second, fourth longest. Pronotum bisinuate and very finely bordered anteriorly, very narrowed in front, arcuately enlarged from anterior angles to the base, widest at base, bordered along half its length by a sharp carina; base feebly bisinuate; disc very irregularly and rather strongly punctate, longitudinally furrowed at middle, with, at each side, a cupreous irregular band, coarsely and densely punctate. Scutellum triangular very wide. Elytra scarcely wider at the base than the pronotum, arcuately attenuate from the shoulders to the tips which are feebly but distinctly tridentate. Disc very distinctly striato-punctate. Prosternal process furrowed, internal angle of the posterior coxae armed with two teeth; abdomen strongly and regularly sculptured, very finely punctured along the lateral margin and clothed with recumbent greyish pubescence, sides, not far from the margin, with a row of irregular smooth, shining, large, steel-blue tubercles; middle strongly punctate on the three first segments, apex of the last rounded and clothed with semi-erect long hairs. Anterior tibiae curved at the extremity, others nearly straight. The specimen described appears to be a female.

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur, April-May, 1932).

37. *Sphenoptera (Hoplistura) obesa benningseni*, Thery.

Arb. Morph. Taxon. Ent. Berlin-Dahlem, Band 3, 1936,
No. 4, p. 295.

(Type Locality: Dar es Salaam.)

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur, April-May, 1932).

38. **Sphenoptera (Hoplistura) arambourgi**, Thery.

Mem. Mus. Nat. Hist., XIX, 1939, p. 277 (Mission del'Omo).

(Type Locality: Elgon Saw Mill.)

Kenya Colony: Kericho (van Someren, May, 1925).

39. **Sphenoptera (Hoplistura) rabaiensis**, n.sp.

(Plate 11. Fig. 12.)

Length: 10 mm. Width: 3 mm. Aeneous below with the anterior margin of the forehead green; cupreous below; antennae black from third joint.

Head very wide but very slightly exceeding the anterior breadth of the pronotum, moderately, irregularly and coarsely punctate, longitudinally furrowed; carina of the antennal cavities strong, arcuate and joining the superior edge of the epistoma; interocular area very much wider than long. Eyes rather small and regularly oval; antennae reaching the level of the anterior coxae; the second joint twice as long as broad, third joint a fifth longer than the second, fourth lobate longest of all, the following sub-equal. Pronotum very feebly narrowed in front, anterior edge bordered and strongly bisinuate with the anterior angles strongly projecting. Sides nearly straight and parallel along the first quarter of their length, then enlarged to the third quarter where they are widest, then gradually narrowed to base; lateral carina feebly arcuate and passing the middle; base feebly bisinuate with a median lobe slightly emarginate. Disc regularly convex, a little flattened at middle; rather finely and irregularly punctate, with the base delicately stippled, punctures becoming coarser towards the sides. Scutellum one and a third as broad as long, finely punctate at middle, rounded at sides, posterior process separated by a stria. Elytra very little wider at humeri than pronotum at base, very little enlarged at the level of humeral callosities, then narrowed to the tips which are separately tri-dentate; exterior and sutural teeth very small and acute, median large and very obtuse. Epipleural carina entirely visible from above. Disc rather regularly striato-punctate, intervals flat except at apex where they project, very finely and irregularly punctate; prosternal process furrowed and deeply punctate at middle; metasternum slightly furrowed, armed at middle of the posterior edge, between posterior coxae, with two small acute teeth. Posterior external angle of these armed with two small, obtuse teeth; interior angle feebly obtuse. Abdomen feebly pubescent, sides of the abdominal segments ornamented not far from the lateral edge with an irregular smooth shining tubercle; middle of the three last segments smooth; last segment angularly emarginate at middle, with the

pleural edge sub-truncate. Anterior and intermediate tibiae strongly arcuate towards the apex, posterior feebly sinuate inside along the posterior half and armed with a very small, obtuse spur; posterior tarsi equal to three-fourths of the length of the tibiae. A male.

Kenya Colony: Rabai (A. F. J. Gedye, January, 1928). A single specimen.

40. **Sphenoptera (Hoplistura) sabakiensis**, n.sp.

(Plate 12. Fig. 13.)

Length: 9 mm. Width: 2.5 mm. Purple to aeneous above and below, antennae black.

Head as wide as pronotum in front, slightly convex, feebly punctate, with two callosities between the eyes, interocular area broader than long, with sides parallel; carina of the antennal cavities short, straight and feebly salient. Eyes rather small, wide. Antennae reaching the level of the anterior coxae, second joint very thick, one and a half times as long as broad, three-fifths longer than the second, a little longer than the following. Pronotum nearly as wide (2.4 mm.) in front as behind (2.6 mm.), nearly as large (2.6 mm.) as long (2.2 mm.), anterior edge very finely bordered and rather deeply bisinuate with the anterior angles rather salient; sides nearly parallel, slightly arcuate in front and feebly diverging towards the base, with posterior angles feebly acute and rather projecting behind; lateral carinae straight and robust not exceeding the middle of the length of the pronotum. Base rather deeply bisinuate with a median, emarginate lobe. Disc regularly convex, very finely and almost indistinctly punctate at middle, punctures becoming a little more distinct towards the sides. Scutellum cordiform, a little broader than long, smooth. Elytra as wide as pronotum at base and a little wider at the level of the humeral callosities, then gradually narrowed to tips which are separately and very acutely tridentate. Epipleural carinae entire, invisible from above, at base suture finely bordered and salient behind. Disc very feebly punctato-striate, with intervals very finely punctate, flat, except posteriorly where the third and fifth intervals are elevated; sides feebly furrowed along the posterior half at the epipleural carina, furrow enlarged towards the apex. Prosternum sparsely punctate, prosternal process flat, nearly smooth feebly expanded behind anterior coxae, feebly trilobate, with the median lobe more developed and rounded at apex; sides with some punctures linearly disposed. Middle of the posterior edge of the metasternum armed between the posterior coxae, with two very small acute teeth, posterior internal angle of posterior coxae rounded, with two very small almost indistinct obtuse teeth; external

angle almost rectangular. Abdomen very finely and sparsely punctate, nearly smooth; sparsely hairy towards sides; last segment rounded and finely crenate at apex, pleural edge wrinkled, rounded at apex. Tibiae straight without sexual characters; probably a female.

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur, April-May, 1932). A single specimen.

41. **Sphenoptera (Hoplistura) buxtoni**, n.sp.

(Plate 18. Fig. 47.)

Length: 14 mm. Width: 4.5 mm. Moderately elongate, narrowed in front and behind, bright bronze colour above, with elytra a little more aeneous, a little darker below. Tarsi greenish.

Head rather wide, feebly depressed and coarsely punctate, ornamented at middle with irregular tubercles. Carina of the antennal cavities oblique, sharp and rather prominent. Antennae extending beyond the level of the anterior coxae, with the joints rather elongate, the second, one and a half times as long as broad, third, twice as long as the second and a little less short than the fourth. Pronotum widest at base, feebly and arcuately narrowed from the base to the anterior angles, a fifth wider at base than in front; a little more than one and a quarter broader than long; bisinuate in front and bordered by an entire stria; lateral carina straight and reaching the middle of the length of the pronotum; posterior angles rectangular; base feebly bisinuate with a rounded median lobe. Disc regularly convex, imperceptibly furrowed, rather regularly punctate, very finely sculptured; the punctures becoming stronger and closer towards the sides. Scutellum sub-cordiform, finely punctate. Elytra as wide at base as the pronotum and prolonging the curve; a little more than twice as long as broad together, widest towards the middle of the whole length of the body, arcuately narrowed to the tips which are separately, sharply and rather briefly tridentate. Disc covered with lines of rather strong punctures (first line less strong) with flat intervals; the intervals feebly salient at apex, feebly and sparsely punctate, sculptured like the pronotum. Epipleural carina entire and well defined, surmounted by a small groove extending nearly to the apex. Suture feebly elevated behind. Chin transverse, truncate and emarginate in front. Anterior margin of the prosternum straight and bordered. Prosternal process feebly depressed at summit, sparsely punctate and expanded behind, rounded at apex. Metasternum furrowed behind. External angles of posterior coxae feebly dentate. Abdomen rather irregularly punctate, finely hairy towards the sides, second, third, and fourth segments with a small, smooth, shining area within the anterior angles;

segments on each side and a little closer to the edge than the middle with a small, smooth, rounded glabrous area; a similar semi-circular one exists on the last segment, middle of the base of each segment with a poorly indicated smooth triangular space. Last segment sub-truncate and very feebly sinuate, showing a sixth, strongly ciliated additional segment. Legs robust, apical half of anterior tibiae strongly curved within, intermediate tibiae rather strongly arcuate and armed with an internal spur at apex; posterior tibiae externally arcuate and strongly ciliate. Tarsi depressed.

Uganda: Lango (D. R. Buxton, August, 1934). A single specimen communicated by the Imperial Institute of Entomology.

42. **Sphenoptera (Hoplistura) fusiformis**, Thèry.

Ann. Mag. Nat. Hist., Ser. 10, Vol. XX, 1937, p. 209.

(Type Locality: Abyssinia.)

Kenya Colony: Naivasha (H. J. Allen Turner, 1935). A single specimen in bad condition appears to belong to this species.

43. **Sphenoptera (Tropeopeltis) trispinosa**, Klug.

Symb. Physic. Bup., 1829, No. 29, pl. 3, p. 3.

(Type Locality: Upper Egypt.)

Kenya Colony: Kaimosi (H. J. A. Turner, March-April, 1932,); L. Baringo (D. R. Buxton, September, 1935); Embakasi (MacArthur, July, 1933).

44. **Sphenoptera (Tropeopeltis) maculata**, C.G.

Mon. Bup., II (Evagora), p. 5, pl. 11, f. 4.

(Type Locality: Cape Colony.)

Kenya Colony: Nairobi (A. F. J. Gedye, April, 1936). A single specimen.

45. **Sphenoptera (Tropeopeltis) chappuisi**, Thèry.

Mission de l'Omo, Mem. Mus. Nat., T. IX, 1939, p. 276.

(Type Locality: Kitale, Kenya Colony.)

Kenya Colony: Elburgon (R. E. Dent, April, 1930). A single specimen compared with the type.

46. **Sphenoptera (Tropeopeltis) badeni**, Kerr.

Mon. Bup., T. VII, 1914, p. 50.

(Type Locality: Guinea teste Kerremans.)

Kenya Colony: Kaimosi (H. J. A. Turner, March-April, 1932). A single specimen compared with type which is in my collection, but without indication of locality.

47. **Sphenoptera (Tropeopeltis) gedyei**, n.sp.

(Plate 12. Fig. 14.)

Length: 11 mm. Width 4.2 mm. Thick, moderately narrowed behind, upper surface glabrous, aeneous, with obscure small distinct spots on the head and pronotum, middle of the elytra darker than sides. Antennae black from the third joint, underside shining cupreous.

Head rather large, cupreous, with two dark spots on the vertex; puncturation of the spots coarse, interocular area twice as broad as long, parallel at sides. Carina of antennal cavities arcuate and nearly united in front. Eyes rather small, sub-elliptic, wide and rather projecting. Antennae not reaching the level of the anterior coxae; second joint nearly twice as long as broad, almost as long as the third, the following serrate. Pronotum narrowed in front, widest behind, one and a half times as broad as long, deeply bisinuate and delicately bordered in front; sides sinuous in front, rounded behind and abruptly narrowed close to the posterior angles which are obtuse; lateral carinae scarcely reaching the anterior third of their length; base deeply bisinuate with a rounded median lobe. Disc very finely and almost indistinctly punctate, the punctures becoming more distinct at sides, ornamented with a few blackish, longitudinal distinguishable bands; on each side, at middle and a little distance from the edge there is a small rounded depression. Scutellum cordiform, finely punctate, a little broader than long. Elytra two and three-quarters as long as broad, widest at shoulders, slightly arcuately narrowed to the tips which are separately and strongly tridentate. Epipleural carina entirely visible from above. Disc feebly convex, with a small fovea on humeri and another, bordered anteriorly by a thick ridge on the basal lobe. Humeral protuberances prominent; surface regularly punctato-striate, intervals regularly convex and salient. Chin angulate and projecting at middle. Prothoracic episterna smooth at middle and finely rugose along the lateral margin. Internal angle of posterior coxae acutely dented; external angle rounded and not projecting, posterior margin smooth and a little thickened at middle. Anterior angles of the four last sternites with a few small, distinct, blackish, finely punctate tubercles; sides of the segments finely and coarsely punctate, rather densely clothed with cinereous hairs. Near the lateral margins there is a very irregular smooth dark area. Middle of the abdomen slightly pubescent. Last abdominal segment longer than broad, rounded at apex. Pleural edge very narrow, tibiae nearly straight, posterior tarsi a little less long than the tibiae. A female.

Kenya Colony: Ngong (A. F. J. Gedye, May, 1937). A single specimen.

This species belongs, in my opinion, to the sub-genus *Tropeopeltis*, by its robust, apical, elytral teeth, but the facies is rather that of a species belonging to *Hoplistura*. It is easily recognizable by the posterior angles of the pronotum being bluntly narrowed.

48. **Sphenoptera (*Tropeopeltis*) caudata**, n.sp.

(Plate 12. Fig. 15.)

Length: 11.3 mm. Width: 3.5 mm. Rather short, elytra strongly sinuate laterally before the apex. Blackish aeneous above, a little brighter below.

Head moderately wide, superficially punctate and depressed in front. Interocular area very large with sides a little divergent towards the top, ornamented at middle with two irregular and distinct tubercles. Carinae of the antennal cavities slightly salient. Eyes sub-elliptic, irregularly convex and appearing sub-angular laterally when viewed from above. Antennae very short, not reaching beyond the middle of the prosternum. Second joint rather robust, a little less than twice as long as broad, third twice as long as broad, fourth twice as long as the second and the longest of all, serrate. Pronotum widest towards the middle of its length, a fourth broader than long, rather deeply bisinuate and bordered in front, anterior angles rather projecting; sides regularly arcuate and bordered by a small, entire, feebly arcuate carina; posterior angles obtuse; base bisinuate with the median lobe sub-truncate and very feebly emarginate. Disc flattened at middle, finely and almost indistinctly punctate, ornamented with a small rounded fovea in front of the scutellum, another towards the middle of each side. Elytra wider at base than pronotum at middle; widest at shoulders, feebly and straightly narrowed from the shoulders to middle, then arcuately attenuated towards the summit before which they are strongly sinuate. Apex tridentate; external tooth acute and projecting; median very obtuse and wide; sutural very small and acute. Epipleural carina entire but visible from above only at the middle. Disc feebly and irregularly impressed along the base; humeral protuberances rather marked, surface very regularly punctato-striate, with intervals flat except at the summit, very finely punctate. Prosternum convex, sparsely, regularly and strongly punctate, anterior edge limited by a ridge, feebly projecting at middle and strongly ciliate. Prosternal process strongly bordered laterally and furrowed at apex, with two parallel rows of large punctures in the base. Internal and external angles of posterior coxae nearly rectangular. Abdomen finely punctate with the posterior margins of the segments broadly smooth, last segment rounded at apex, with the pleural

edge narrowly truncate between two small teeth. Tibiae nearly straight. A female.

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur, April-May, 1932). A single specimen.

49. **Sphenoptera (Tropeopeltis) plumbiventris, n.sp.**

(Plate 12. Fig. 16.)

Length: 13 mm. Width: 3.3 mm. Sub-oval, elongate; head and pronotum aeneous, elytra more purple; abdomen of a black lead colour. Antennae black from the third joint. Head medium-sized, indistinctly punctate on the vertex, interocular area broader than long, finely, regularly and sparsely punctate, with sides a little convergent towards the summit, without distinct tubercles. Carinae of the antennal cavities arcuate and moderately salient. Antennae nearly reaching the anterior coxae, joints rather elongate, the second short, sub-globular almost as broad as long, third slender, twice as long as the second, fourth very feebly lobate a quarter longer than the third and the longest joint, apical angle of the lobate part of the succeeding joints rectangular. Pronotum moderately narrowed in front, feebly bisinuate and bordered anteriorly, anterior angles strongly projecting; sides feebly arcuate and limited to middle by a small ridge, then by an indistinct carina. Posterior angles sub-rectangular, base a fourth wider than the summit, bisinuate with a truncate median lobe. Disc very regularly convex, with a very small fovea in front of the scutellum, very finely and regularly punctate, the punctures becoming deeper towards the sides. Scutellum widely cordiform, twice as broad as long, very finely and deeply punctate. Elytra as wide at shoulders as pronotum at base, widest at level of the humeral callosities, then arcuately and regularly narrowed to the tips which are separately acutely tridentate; external tooth feebly projecting outwards. Epipleural carina sharp, entire, and nearly straight from shoulders to the apex, when viewed in profile, entirely visible from above. Disc striato-punctate, few distinct punctures at middle, intervals more or less convex and very finely stippled. Prosternum very convex, very regularly and rather deeply punctate; prosternal process rather wide, rounded at apex. Internal angle of posterior coxae obtusely angulous. Abdomen rather regularly punctate. Last segment rounded at apex and finely ciliate, pleural edge very narrow, posterior angles of the three intermediate segments feebly toothed. Tibiae straight. Tarsi a fourth shorter than the tibiae. A female.

Kenya Colony: Golbanti (MacArthur, September, 1932). A single specimen.

50. **Sphenoptera (Tropeopeltis) somereni**, n.sp.

(Plate 12. Fig. 17.)

Length: 15 mm. Width: 5 mm. Blackish, dark aeneous above and below. Head medium-sized, rather finely punctate on the vertex, slightly rugose in front, longitudinally furrowed; interocular area much broader than long, parallel at sides; carinae of the antennal cavities straight, and rather projecting. Eyes regularly elliptic and rather large; antennae not quite arching the level of anterior coxae; second joint a little longer than broad, third almost twice as long as the second; fourth joint the longest. Pronotum widest at base, nearly one and a half times wider at base than the summit, nearly as broad as long in front, bordered anteriorly and feebly emarginate with the anterior angles moderately projecting; sides very feebly arcuate with the posterior angles rectangular; lateral carinae straight and extending two-thirds of the length. Base bisinuate at each side of the lobe, median lobe widely truncate. Disc rather regularly convex, with a rounded superficial fovea not far from the scutellum, surface finely and irregularly punctate, the punctures rather more distinct towards the sides, base very delicately stippled. Scutellum widely cordiform, one and a half times as broad as long, convex, very finely punctate. Elytra a little wider at shoulders than the pronotum, widest at the level of the humeral callosities where they are a seventh wider than the pronotum, then gradually narrowed to the posterior third, then sinuously attenuate to the tips which are separately, acutely, and lengthily tridentate, the exterior tooth projecting outwards and removed from the second. Disc strongly and very distinctly striato-punctate, intervals convex, base finely and rather densely punctate. Epipleural carina entirely visible from above. Prosternal process convex, sparsely and rather deeply punctate, feebly enlarged behind anterior coxae, slightly trilobate and rounded at apex. Metasternum nearly smooth at middle, strongly and densely punctate towards the sides. Internal angle of the posterior coxae obtuse and rounded at summit, external angle rounded. Abdomen almost glabrous, finely and densely punctate, first segment triangularly flattened at middle with the process superficially furrowed; last segment rounded, bordered with a series of rigid black hairs. Pleural edge strongly serrate at middle and angles of the last segment provided with a smooth plate. Tibiae almost straight; tarsi enlarged at the apex, posterior tarsi a fourth shorter than tibiae, first joint longer than both the two succeeding. A female.

Kenya Colony: Kitale (Dr. van Someren, May-June, 1932). A single specimen.

51. ***Anthaxia (Cratomerus) callicera*, Gerst.**

(Plate 12. Fig. 18.)

Jahrb. Wiss. Anst. Hamburg, I, 1884, p. 52.

(Type Locality: Arusha.)

I think that the specimens examined agree well with *Anthaxia callicera*, but the specimen briefly described by Gerstaecker, from late German East Africa, is a little smaller, and he has not referred to the sexual characters of the intermediate tibiae. I have not been able to see the type. Gerstaecker's description is very short and inadequate and I give here a more complete description based on specimens collected at Ngong by Dr. van Someren.

Length: 11 mm. Width: 3.3 mm. Belongs to the sub-genus *Cratomerus* characterized by sexual dimorphism. The males always have the antennae much expanded at the middle and sometimes the posterior femora are much thickened. The form in both sexes is elongate and very acuminate posteriorly; the posterior edge of the elytra is distinctly serrate.

Bright green, pronotum with two obscure longitudinal bands, elytra with a large cupreous, very shining spot covering the middle of both elytra from the anterior fourth to the apex.

Head medium-sized, furrowed in front, the furrow deeper behind the epistoma; clothed with greyish, thick hairs. Inter-ocular area a fourth longer than broad, with sides parallel at base, arcuately and strongly convergent towards the vertex at summit. Epistoma wide arcuately and deeply emarginate. Eyes moderately projecting separated at the summit by a space equal to a little less than a third of the breadth of the head. Antennae reaching the level of the anterior coxae; first joint thickened at apex, second very short, broader than long; third bluntly enlarged, twice as broad as long; fourth joint widest of all; succeeding joints short and progressively reduced to apex. Pronotum widest at the anterior fourth, a little more than one and a quarter wider at base than at the summit; a little less than one and a half times broader than long. Anterior margin feebly emarginate and bordered, anterior angles slightly projecting. Sides obliquely and straightly enlarged from anterior angles to the anterior fourth, then straightly and very feebly narrowed to posterior angles which are almost rectangular, lateral carina very tenuous, feebly arcuate, disappearing at middle of the length of the pronotum. Base nearly straight, feebly sinuate towards sides. Disc rather deeply excavated at each side, between the middle and the lateral edge; linearly and briefly furrowed in front of the scutellum. Surface very finely reticulate, the reticulation becoming wider towards the posterior angles, very transverse at middle and forming

some wrinkles in front. Scutellum rather large, sub-cordiform, delicately shagreened. Elytra widest at shoulders where they are sub-angulate and slightly wider than the pronotum at base, two and a fifth times as long as broad together, narrowly attenuate from shoulders to tips which are separately rounded and rather strongly serrate, serrations extending along the sides to the posterior third. Humeral callosities slightly projecting. Epipleural carina entire, feebly indicated at base, visible from above from the anterior third. Sides of the abdomen extending over the edge of the elytra; suture feebly carinate behind. Disc clothed with a few recumbent greyish hairs; widely impressed at base and on the humeri; surface very even, very finely sculptured on the discal cupreous spot, more rugose and slightly wrinkled elsewhere. Underside very finely punctate and rather densely hairy. Pleural edge of the last sternite sub-truncate, and very finely serrate. Intermediate tibiae armed on inner side at middle with a broad acute tooth and deeply emarginate between the tooth and the apex.

Kenya Colony: Ngong (Dr. van Someren, April-July, 1934). I have seen only male specimens and if this species should prove to be new it can take the specific name of *Anthaxia someriana*.

52. ***Anthaxia nyassica knighti*, n.subsp.** (Plate 18. Fig. 48.)

Length: 10.65 mm. Width: 3.2 mm. Male. Elongate, moderately convex, acuminate posteriorly and narrower behind than in front. Reddish colour above, with a greenish tinge towards the sides of the pronotum and along the base of the elytra. Forehead, antennae and underside coppery green.

Head puncturation aciculate, the punctures more apart at middle; with two protuberances separated by a short and narrow furrow. Epistoma widely emarginate and limited in front by a smooth cupreous band. Eyes very close on the vertex and partly hidden by the pronotum. Interocular area nearly twice as long as broad, with sides feebly arcuate. Antennae short, widened and lobate from the third joint; joints very broad and short from the second to the sixth, last very small. Pronotum feebly sinuate and bordered in front, broadest towards the anterior fifth, sides rounded at the anterior third then almost straightly converging towards the base; lateral carina rather sinuous and slightly curved downwards, reaching at most the middle of the length of the pronotum; base feebly sinuous. Disc rather flattened, widely and deeply depressed at each side, with a wide, median, small distinct groove not reaching the middle of the length; sides strongly reticulate, the reticulation becoming transverse and forming at middle numerous and not very distinct wrinkles. Scutellum sub-triangular. Elytra scarcely broader than pronotum

at base, narrowed from shoulders to the tips which are separately rounded and finely serrate, bordered by an entire prominent carina and at the base by a narrow swelling; irregularly impressed and coarsely sculptured behind the swelling. Disc feebly pubescent, strongly punctate at middle, strongly wrinkled at base and towards the sides. Suture finely bordered along three-fourths of its length but not prominent. Prothoracic episterna smooth along the superior margin, punctate and pubescent elsewhere. The whole of the underside rather sparsely and lengthily hairy. Last sternite subtruncate and serrate at each side with the edge raised. Trochanters of the posterior legs terminated by a strong obtuse point. Anterior tibiae externally with a strongly arcuate tooth, edge of the tibiae feebly sinuous between the tooth and the apex. The female differs from the male in having the antennae less expanded at middle, the teeth of the tibiae in the form of a hook, reduced to a simple sinuosity towards the apex of the tibiae; the sides of the pronotum more rounded, underside less pubescent, etc.

Kenya Colony: Makuyu (C. D. Knight, November, 1935). Three males and two females communicated by the Imperial Institute of Entomology. Ol Donyo Sabuk (A. F. J. Gedye, male paratype). Two paratypes in my own collection.

53. ***Anthaxia (Cratomerus) macarthuri*, n.sp.**

(Plate 13. Fig. 19.)

Length: 8 mm. Width: 2.75 mm. Elongate, narrowed behind, aeneous with the forehead and a small margin at the base of the elytra bright green (male); underside greenish, antennae golden.

Head two-thirds the length of the pronotum, sparsely and superficially punctate; punctures umbilicate, without distinct reticulations; excavated in front, feebly and longitudinally furrowed at middle, with a transverse impression behind the epistoma; clothed with greyish and woolly hairs. Interocular area about twice as long as broad, arcuate at sides. Epistoma widely, arcuately and deeply emarginate. Eyes feebly projecting, rather separated at the summit, interocular area equal to a little less than a fourth of the width of the head. Antennae rather long, surpassing the level of the anterior coxae, progressively enlarged from the third joint to the sixth and progressively narrowed from the seventh to the tip, the last joint rounded, others rounded within and subangularly rounded outside. Pronotum widest at anterior fourth, a little less than a quarter wider at base than at the summit, about a third broader than long; anterior edge straight with angles feebly projecting; sides rounded forward, straight from middle to the

base; lateral carina disappearing at middle; posterior angles sub-acute; base slightly arcuate and moderately emarginate at each side. Disc rather deeply excavated near to posterior angles, the excavations extending in front but not exceeding the anterior third, narrowly furrowed at middle, the furrow shortened before and behind; strongly reticulate at sides, the reticulations becoming dense and transversely wrinkled at middle. Scutellum rather wide, sub-cordiform, delicately shagreened. Elytra widest at shoulders, where they are a little less wide than the pronotum at middle; two and a fifth times as long as broad; humeral angle feebly toothed. Humeral callosities slightly prominent, sides feebly and arcuately narrowed from shoulders to tips which are separately rounded and rather strongly serrate; the serration amounting to a fifth of the length. Epipleural carina entire, strong, in form of a groove from shoulders to apex. Suture strongly carinate to the posterior half. Disc very sparsely, delicately and rather lengthily hairy, depressed posteriorly along the suture and base; base finely striate. Surface rather swollen at each side, behind the basal depression. Puncturation very small, aciculate and slightly rugose at base. Underside very finely, densely and regularly punctate in front, less densely on the abdomen; delicately hairy. Anterior margins of prosternum widely and arcuately emarginate, finely bordered. Prosternal process wide, trilobate at apex, bordered at sides. Posterior trochanters strongly toothed, edge of the last abdominal segment flattened, apex of the same segment sub-truncate and indistinctly crenulate. Anterior and intermediate tibiae slightly sinuate and feebly denticulate on the inside. The female differs from the male in being entirely aeneous, with antennae less expanded, last abdominal segment rounded at apex and tibiae straight.

Kenya Colony: Sokoke, VII, 1932, H. J. A. Turner (holotype and allotype); Lower Tana-Sabaki, April-May, 1932, Turner and MacArthur.

54. ***Anthaxia turneri***, n.sp. (Plate 13. Fig. 20.)

Length: 7.15 mm. Width: 2.4 mm. Blackish, flattened above, sub-parallel. Head rather wide, a little wider than three-fourths of the pronotum, covered with small reticulations, feebly convex, with a transverse depression behind the epistoma, clothed with whitish short pubescence. Interocular area almost as long as broad, arcuate at sides. Epistoma widely and arcuately emarginate. Eyes rather deeply projecting laterally, the distance between them on the vertex exactly equal to a third of the width of the head. Antennae short, reaching only to the middle of the prosternum beneath. Second joint twice

as long as wide, a little shorter than the third and sub-equal to the fourth. Pronotum widest at middle, about one and two-thirds as broad as long, deeply bisinuate and distinctly bordered in front, with anterior angles feebly salient in front when viewed from above, median lobe rounded, sides regularly arcuate, bordered by an excessively obscure, nearly invisible carina in front; posterior angles obtuse; base slightly arcuate; disc minutely reticulate, transversely and widely depressed behind. Scutellum cordiform, concave. Elytra about as wide at shoulders as at middle (lateral edge of the abdomen included) about twice as long as wide, angular at humeri; sides feebly sinuate from shoulders to apical third, then arcuately narrowed to tips, which are separately rounded and very finely denticulate along the posterior edge. Epipleural carina strong, in form of a furrow from shoulders to the apex. Suture posteriorly carinate. Disc very finely and transversely shagreened; depressed along the base with sides deeply furrowed from the middle to the apex close to the epipleural carina. Underside almost reticulate, very finely and sparsely pubescent. Prosternum straight and very distinctly bordered in front, slightly convex. Prosternal process wide, bordered at sides, trilobate at apex, the median lobe long and narrow; lateral angle of coxae acute. Sides of abdomen wrinkled. Posterior angles of abdominal segments swollen and projecting outwards, armed with small teeth. Last sternite concave along the posterior edge and regularly serrate. Tibiae without particular characters. A distinctive species by the shape of the abdomen. (Plate 13. Fig. 20-a.)

Kenya Colony: Lower Tana-Sabaki (Turner and MacArthur).
One female.

55. ***Anthaxia nairobiensis*, n.sp.** (Plate 13. Fig. 21.)

Length: 5.9 mm. Width: 1.9 mm. Narrow, sub-parallel at sides; entirely bronze cupreous, antennae black, tarsi blue; glabrous.

Head wide, nearly a fifth less wide than the pronotum at middle, feebly furrowed in front; very finely, superficially and somewhat distinctly reticulate; sparsely clothed with long whitish pubescence. Interocular area longer than broad, arcuate at sides. Epistoma feebly and arcuately emarginate, without lateral process. Eyes slightly projecting, separated on the vertex by more than a third of the total width of the head. Antennae short, not reaching the level of the anterior coxae, first joint as long as the three following united; second equal to the third and fourth. Pronotum widest towards the middle, one and three-quarters as broad as long, a little wider at base than at the summit; very deeply bisinuate and bordered in front; median

lobe rounded, angles rather projecting; sides rather regularly convex, lateral carina scarcely distinct in front, posterior angles obtuse, base nearly straight. Disc rather regularly convex, very feebly depressed at posterior part of sides, sides with a rather strong reticulation, more distinct at base and becoming very obsolete and transverse at middle where it is nearly indistinct. Scutellum rather large, sub-cordiform finely shagreened. Elytra about equally wide at base as at posterior third (sides of abdomen visible from above included) about twice as long as broad, humeral angles slight; humeral callosities not prominent and disclosing the epipleural carina; sides nearly straight up to the posterior third then arcuately narrowed to the tips which are separately rounded and distinctly serrate. Epipleural carina entire, surmounted by a furrow beginning behind the shoulders, rather strongly enlarged along the posterior half and disappearing at summit. Epipleural carina continued at apex and joining the sutural carina. Disc impressed posteriorly along the suture, very finely and transversely rugose and distinctly shagreened. Underside slightly hairy and feebly sculptured. Prosternum straight and bordered in front. Prosternal process wide, bordered at sides, trilobate, rather pubescent. Exterior angles of posterior coxae projecting; sides of abdomen feebly swollen and easily seen from above. Last sternite rounded at apex and finely serrate, disc strongly bi-impressed backward, marginal edge slightly sub-erect. Pygidium lengthened posteriorly into a projection, appendice parallel at sides and truncate at apex.

Kenya Colony: Nairobi (A. F. J. Gedye). One female.

56. ***Anthaxia keniae***, n.sp. (Plate 13. Fig. 22.)

Length: 7.4 mm. Width: 2.6 mm. Rather elongate, about a fifth less wide than the pronotum at middle, flat in front, finely granulose and clothed with whitish hairs. Interocular area nearly as broad as long, nearly straight and almost parallel at sides, epistoma widely and feebly emarginate. Eyes slightly projecting laterally; separated on the vertex by a distance equal to a third of the total width of the head. Antennae short, second joint almost one and a half times as long as broad, a little shorter than the third. Pronotum widest at anterior fourth, a little more than one and four-fifths as broad as long, a fifth wider behind than in front, strongly bisinuate and bordered in front with anterior angles rather prominent; sides rather strongly rounded in front and very feebly behind; lateral carina sharp, effaced anteriorly on half of the length; posterior angles slightly obtuse; base nearly straight. Disc widely depressed in front of the scutellum; largely depressed at each side towards

posterior angles, very strongly reticulate at sides, finely, densely and transversely wrinkled at middle. Scutellum large and straight anteriorly, lateral angles well marked, sides at first parallel, then rounded with a small posterior point. Elytra widest at shoulders, attenuate from shoulders to posterior third when they are rounded, then attenuate to tips which are separately rounded, strongly serrate along the third of the lateral edge. Epipleural carina in form of a furrow from shoulders to the posterior third. Suture carinate behind. Disc very uneven, similar to that of *A. confusa*, Germ., base transversely impressed, an oblique depression reaches from humeri towards the suture at first third, another oblique depression towards the middle of the lateral edges, third depression along the posterior third of the suture and the last reaching along the lateral edge from middle to apex. Underside rather rugosely punctate, delicately hairy; prosternum convex, straight at anterior edge; prosternal process wide, bordered at sides, feebly trilobate. Last abdominal segment depressed behind, rounded at apex, serrate, with a small hollow. Tibiae straight.

Kenya Colony: Rumuruti (MacArthur, June, 1933). A single female.

57. ***Anthaxia smaragdiceps*, n.sp.** (Plate 13. Fig. 23.)

Length: 4.75 mm. Width: 1.75 mm. Golden bronze, a little darker below, forehead bright emerald green. Antennae black, anterior margin of pronotum green; tarsi dark green.

Head one-sixth less wide than the pronotum at middle, slightly convex in front; not distinctly reticulate and clothed with very short inconspicuous whitish pubescence. Interocular area a little longer than broad, arcuate at sides. Epistoma rather strongly and sub-arcuately emarginate. Eyes slightly projecting, separated on the vertex by a distance exceeding a third of the total width of the head. Antennae very short and feebly serrate from the fourth joint; second joint a little shorter than the third. Pronotum widest near the anterior third, a little less than one and three-quarters as broad as long; a third wider at base than in front; strongly bisinuate and bordered in front with the median lobe rounded but anterior angles rather projecting; sides rather rounded in front, straight and converging behind; lateral carina effaced in front on half the length. Posterior angles obtuse, base nearly straight, disc widely depressed at each side towards posterior angles; rather strongly reticulate at sides, reticulations becoming superficial, less distinct and slightly transversé at middle. Scutellum large, anterior angles almost rectangular, base straight. Elytra widest at apical third (abdomen included) slightly narrower at base than the pronotum at middle;

twice as long as broad; sides straightly and nearly parallel to posterior third, then arcuately narrowed to tips which are separately rounded and quite indistinctly serrate. Epipleural carina entire and feebly erected in form of a furrow, along five-sevenths of its length; suture carinate behind, a disc a little uneven, obliquely depressed from shoulders to the suture at anterior third, furrowed along the lateral edge from middle to apex. Surface slightly rugose and feebly shagreened. Posternum straightly truncate in front, coarsely punctate, slightly pubescent, trilobate behind with the median lobe acute. Last abdominal sternite feebly depressed along the posterior edge, sub-truncate at apex and very feebly serrate. Tibiae straight, the posterior, with a small protuberance at the internal third.

Kenya Colony: Rumuruti (MacArthur, June, 1933).

58. ***Anthaxia chyuluensis***, n.sp. (Plate 14. Fig. 24.)

Length: 5 mm. Width: at posterior third of elytra 1.85 mm. Aeneous, with greenish reflections above, head bright green, abdomen cupreous. Male.

Head large, nearly flat in front, finely reticulate. Epistoma emarginate, rounded at each sides. Interocular area widest at middle, arcuate at sides. Eyes moderately salient, rather separated on the vertex. Antennae short, first joint rather long, four following subequal. Pronotum a little more than one and a half times as broad as long, bisinuate and finely bordered in front, anterior angles rather salient, sides rather strongly and regularly arcuate in front, less strongly arcuate behind, bordered laterally with an extremely small sinuous carina. Posterior angles widely obtuse; base nearly straight. Disc regularly and feebly convex, posterior angles widely excavated; strongly reticulate at sides and very finely, densely and transversely striate at middle. Scutellum rather large, rounded behind. Elytra rounded at shoulders, nearly straight from the shoulders to the posterior third then arcuately narrowed to tips which are separately rounded and very finely serrate. Epipleural carina entire, prominent, forming a furrow. Suture very elevated behind. Disc feebly depressed along the base and behind the shoulders, sides furrowed close to the lateral margins, from middle to apex. Elytra separately convex at apex. Surface extremely finely sculptured with a silky reflection; sparsely clothed with very fine recumbent hairs. Sides of the first abdominal segments separately expanded and visible from above. Lateral anterior process of the abdomen and posterior angles of the first segment ornamented with a small white hairy spot; last segment sub-truncate at apex and feebly excavated at middle. Posterior external angles of the posterior coxae acute

and feebly projecting. Tibiae straight, without sexual characters, posterior tarsi a little shorter than the tibiae.

Kenya Colony: Chyulu Hills (Coryndon Memorial Museum Expedition, June, 1938). Alt. 5,600 ft. One specimen.

This species is closely allied to *Anthaxia smaragdiceps*, mihi, described above and is perhaps a local race. It differs by the upper surface being less uneven, the colour less cupreous, sides of the hollow of the epistoma rounded and last abdominal segment not distinctly serrate at sides.

59. ***Anthaxia mombasica***, Thèry.

Bull. Soc. Sc. Nat. Maroc, TIX, No. 7-8 (1929).

(Type Locality: Mombasa). Paratype: Nairobi (A. F. J. Gedye); Machakos (Rev. J. W. Hunt).

Kenya Colony: Ol Donyo Sabuk (A. F. J. Gedye, April, 1934).

This species has been frequently confounded by authors with the little green *A. hauzeri*, Kerr., from which it is very different. A paratype of *A. hauzeri* is in my collection.

Obenberger has described two new species of *Anthaxia* from British East Africa. *A. bryanti*, Obb. (Arch. fur Naturges, 1926, p. 212, and *A. chalcodisca*, Obb., l.c., p. 213. The specimens described are males. Length of the first 11 mm.; of the second 8 mm. They are compared with *A. hungarica*, F., a Mediterranean species; both have a large spot on the disc of the elytra. *A. bryanti* seems to differ from the species described by me under the name of *callicera*, Gerst., by the semi-erect pubescence of the head, the interocular area with parallel sides, the epistoma feebly emarginate, the third joint of the antennae the widest with the following strongly attenuate. While in the species described by myself the fourth joint is the widest and the following gradually decrease in width. The pronotum is widest at middle and the author did not indicate any sexual characters in the tibiae. *A. chalcodisca* seems to differ from *A. callicera*, Thèry nec Gerst., by its smaller size (8 mm.), the discal spot of a cinnabar colour and well defined, the second joint of antennae twice as broad as long, absence of sexual characters in the tibiae, etc. The species described by me under the name of *callicera* does not quite correspond with Gerstaecker's description and is perhaps a new species. It is considerably broader than *A. hungarica* which the author said of his species "*Cratomerus cyanicornis*, F., female habitu, etc., sculptura haud dissimilis sed angustior."

60. ***Chrysobothris ventriplaga*, Obb.**

Arch. f. Naturg., 1926 (1928), p. 304, pl. 6, f. 18.

(Type Locality: Abyssinia.)

Kenya Colony: Kibwezi (W. Feather, May, 1929). A single specimen. My collection contains a specimen from Alitiena, Abyssinia.

61. ***Chrysobothris indigacea*, Kerr.**

Ann. Soc. Ent. Belg., XXXVII, 1893, p. 258.

(Type Locality: Gaboon.)

Kenya Colony: Voi (MacArthur, July, 1930). One specimen exactly similar to a specimen in my collection from Maracca, Abyssinia, which was determined by comparison with the type. The type is more violet in colour.

62. ***Chrysobothris dorsata*, F.**

Manl. Ins., 1, p. 179 (1787).

Kenya Colony: Rabai (van Someren, November-December, 1933); Lower Tana-Sabaki (Turner and MacArthur, May, 1934). A very common species extending from Egypt and Senegal to South Africa, Seychelles, Mauritius, etc.

63. ***Chrysobothris gedyei*, n.sp.** (Plate 14. Fig. 25.)

Length: 8 mm. Width: 3.25 mm. Rather elongate, entirely of a bronze colour. Head as large as pronotum in front; very finely punctate on the vertex, longitudinally, and finely furrowed, the furrow joining a semi-circular impression surmounting a thick transverse, regularly punctate ridge. Under this ridge, the forehead has a wide depression, the base of which is finely pubescent and covered with fine wrinkles, concentrically arranged around three centres. Eyes oval, rather projecting; a little transversally depressed, and somewhat separated on the vertex. Pronotum a little less than one and two-thirds as wide as long, widest behind the middle, and wider in front than at the base; deeply bisinuate anteriorly, with a very projecting median lobe; bordered by two striae, of which the posterior is interrupted at the mid-point of its length. Anterior angles truncate; sides sub-parallel at middle, a little arcuately narrowed behind, and bordered laterally by a small feebly arcuate, abridged carina in front. Base deeply bi-emarginate with a rounded median lobe. Disc transversally and closely wrinkled, the wrinkles becoming more marked at the sides.

Scutellum triangular, sub-equilateral. Elytra a third wider than the pronotum at base, rounded at the shoulders, and feebly sinuate from humeri to just after the middle, where they are widest, then feebly tapering toward the tips which are separately

rounded and rather deeply serrate at the sides from the mid-point to the apex where the denticulation is very reduced.

Disc moderately punctate, somewhat densely arranged and becoming more pronounced and more rugose toward the sides. First elytral costa distinguishable only in its posterior half, the second at its middle, the remainder wanting. Sutural carina abbreviated in front. Basal lobe of elytra feebly excavated. Disc of each elytron with a rather deep impression at mid-point, uniform in colour with the rest of the surface. Under-surface rather smooth; prosternum furrowed along its anterior edge; prosternal process widely expanded behind anterior coxae, and strongly trilobate, lateral lobes arcuate at apex, median lobe acute and moderately projecting. Anterior angles of abdominal segments ornamented with white triangular pubescent spots.

The first segments widely and longitudinally furrowed; posterior angles of second and third segments feebly acute, those of the fourth very acute and projecting; last segment carinate and arcuately emarginate at apex between two teeth, wrinkles with parallel at sides and densely clothed with long recumbent greyish pubescence. Anterior femora widely and triangularly toothed.

This specie belongs to the *Chrysobothris dorsata* group.

Kenya Colony: Nairobi (A. F. J. Gedye, June, 1921). One male specimen (type).

64. ***Chrysobothris macarthuri*, n.sp.** (Plate 14. Fig. 26.)

Length: 12 mm. Width: 4.75 mm. Short, thick, sub-parallel at sides; bronze colour above, with the sides of the pronotum widely margined with a lighter defined bronze colour. Under-parts blue at middle with lateral edges of posterior coxa and posterior half of abdominal segments, red. Head wide; vertex strongly punctate, finely and longitudinally furrowed, the furrow joining another arcuate groove surmounting a thick, strongly punctate transversal ridge. Forehead flat, clothed with rather long recumbent hairs, and ornamented at the bottom with striae concentrically arranged around three centres. Epistoma very widely and very feebly emarginate, surmounted by two small, but distinct carinae re-ascending to the middle of the front. Eyes projecting, laterally and slightly depressed transversely and inclined toward each other on the vertex. Antennae reaching the level of anterior coxae. Pronotum widest at posterior third; a little more than one and three-quarters as wide as long, a little wider before than behind, deeply bisinuate in front, with a projecting median lobe, bordered in front by an entire stria, with anterior angles rounded and not projecting. Sides feebly sinuate from the anterior angles to the posterior third, then

strongly rounded to the posterior angles. Lateral carina entire; posterior angles rounded; base deeply and somewhat angled, bi-emarginated with median lobe rounded. Disc rather strongly punctate and very slightly wrinkled at middle, wrinkles becoming very deep on the lateral bright bands. Scutellum triangular, sub-equilateral, with very acute angles. Elytra a little more than a tenth wider than pronotum; widest at shoulders and only slightly less wide at the posterior third; one and three-quarters as long as wide, rounded at the shoulders and very feebly sinuate from humeri to apical third, then more tapering toward tips which are conjointly rounded, with sutural angles sharply toothed. Sides serrate from humeri to apex, the denticulation at first very inconspicuous then more pronounced towards apex. Disc rather evenly and regularly punctate, without traces of costae ornamented with a deep fossa and at each side of the suture, towards its middle is a superficial depression. Basal lobe of elytra strongly angulate. Epipleural carina wanting; posterior angles of abdominal segments very sharp and visible from above, underparts very shiny. Prosternum flat, very finely punctate. Prosternal process wide, trilobate. Abdomen superficially wrinkled at middle, last sternite covered with parallel, arcuate striae; feebly emarginate at apex between two short teeth. Sides of sternites striate with a pubescent impression in anterior angles; lateral area of posterior coxae clothed with long hairs. Tibiae straight. Anterior legs long and very acute.

Kenya Colony: Laitokitok, (C. G. MacArthur, February, 1934). One female specimen (type).

65. ***Chrysobothris gelhardtiana***, n.sp. (Plate 14. Fig. 27.)

Length: 10.8 mm. Width: 4.8 mm. Short, widest at posterior third; entirely of a light aeneous colour, with sides of the pronotum broadly bordered by a well defined golden cupreous band.

Head wide, vertex rather strongly punctate, with a transverse arcuate furrow surmounting and before the thick ridge. Forehead flattened, slightly pubescent, ornamented with some striae concentrically arranged around a single centre. Epistoma very wide and feebly emarginate. Eyes projecting laterally and slightly transversally depressed, inclined toward the centre at the vertex. Antennae reaching the level of the anterior coxae. Pronotum widest at posterior third, a little less than one and three-quarters as wide as long, a little wider in front than behind, bisinuate anteriorly with the marginal striae widely interrupted at middle; anterior angles not projecting; sides feebly sinuate from the anterior angles to posterior third, then strongly convex to posterior angles which are rounded; bordered laterally by an

entire carina. Base deeply emarginate at each side with a median sub-truncate lobe. Middle of disc finely punctate, sides finely and transversally wrinkled. Scutellum triangular, steel-blue, a little longer than wide. Elytra little more than one and a fifth wider than the pronotum, a little less than one and two-thirds as long as wide; very little wider at posterior third than at humeri; rounded at shoulders then straight along apical third, then attenuate to tips which are conjointly attenuate; entire margin serrate from shoulders to tips, the serrations being sharp and strong from the middle to the apex. Disc feebly and regularly punctate, without costae; basal foveae not very conspicuous; two, superficial, indistinct and round between the suture and sides and an elongate one behind these, close to the lateral margins. Basal lobe of elytra rounded. Epipleural carina absent. Posterior angles of abdominal segments very acute and visible from above. Prosternum very finely punctate as also the abdomen. First segment of abdomen deeply furrowed, lateral edge of segments longitudinally impressed, last sternite carinate at middle and feebly emarginated at apex between two teeth. Anterior femora with a wide obtuse tooth.

Closely allied to *C. macarthuri*, but differs by frontal striae being arranged around a single centre; by the basal lobe of elytra being rounded, and the under-surface being entirely aeneous; furthermore, the elytral serrations are stronger and the first abdominal segment is deeply furrowed.

Tanganyika Territory: Katona, near Pangani, May, 1905. Type in my own collection. One female.

66. ***Actenodes gabonica johnstoni***, n.subsp. (Plate 15. Fig. 28.)

Differs from *A. gabonica gabonica*, Ehrnst, by the shape of the pronotum, the posterior angles of which do not project outwardly. (Fig. 28a.)

Tanganyika Territory: Katona Johnston, September, 1932). One specimen.

67. ***Pseudobelionota lineatipennis***, Sol.

Ann. Soc. Ent., F2, 11, 1933, p. 308.

(Type Locality: Senegal.)

Kenya Colony: Makindu (C. G. MacArthur, December, 1933). One specimen.

68. ***Phlocteis quadricornis***, Fairm.

Rev. Ent. Caen., p. 100, 1892.

(Type Locality: Abyssinia.)

Kenya Colony: Rumuruti (C. G. MacArthur, May, 1933). One specimen.

69. **Discoderopsis macarthuri**, n.sp. (Plate 15. Fig. 29.)

Length: 7 mm. Width: 2.9 mm. Elongate, black; elytra, abdomen and legs with a bronzy reflection; clothed with rather long recumbent greyish hairs forming a pattern with the blackish intervening pubescence.

Head rather large, convex, longitudinally furrowed, clothed with a thick black pubescence intermingled with spots of fine whitish hairs. Epistoma strongly narrowed between antennal cavities, broadly emarginate in front. Antennal cavities wide, surmounted by an exteriorly enlarged groove. Interocular space wider than long. Eyes rather large, regularly elliptic, slightly covered by the anterior margin of the pronotum. Antennae serrate from the fifth joint, second joint shorter than the two following. Pronotum one-fourth wider than long, widest toward the base; anterior margin with a somewhat pronounced central projection; sides very feebly arcuate and narrowed toward posterior angles; marginal carina entire and angularly sinuate near the base; posterior angles rounded; base deeply bi-sinuate, with a median sub-truncate lobe. Disc very strongly and semi-circularly depressed behind, feebly furrowed at middle, clothed with black hairs intermingled with fine white hairs especially toward the sides; posterior half distinctly wrinkled transversely. Upper lateral carina smooth, shiny, sinuous, united with the lower carina a little in front of the posterior angles, but not reaching the anterior edge. Scutellum very large, sub-equilateral, smooth, and very shiny. Elytra nearly as wide as pronotum at shoulders; widest at posterior third (where the abdominal segments are visible) with parallel sides from the humeri to posterior third, then gradually narrowing to the tips which are separately rounded and finely serrate. Epipleural carina entire and merged into the margin beyond the posterior half. Disc deeply and widely excavated along the base; suture posteriorly carinate, with the surface finely and regularly punctate. Chin-piece rounded and narrowly bordered. Prosternum convex, strongly though sparsely punctate, haired; prosternal process wide, narrow and rounded posteriorly. Posterior coxae angularly emarginate at posterior edge, external angle acute but not projecting outwardly. Abdomen distinctly reticulate, slightly and sparsely pubescent. Last segment feebly sinuate at apex. Pygidium armed in the middle with a small projection visible from above. Legs moderate, tarsi short, claws lobate.

Kenya Colony: Holar on the Tana River (C. G. MacArthur, November, 1933).

Genus *XENITA*, n. genus.

For some considerable time, I have maintained a distinction in my own collection between certain species of *Agrilini*,

hitherto placed in the Genus *PHLOCTEIS*, especially *P. pulchra*, Obl., and several other undescribed species, under the unpublished generic name *XENITA*.

Amongst the material taken by Mr. H. J. Allen Turner is a specimen which I associate with this genus, and as my own material is not now available to me, I take the opportunity of describing the distinctive characters of this new genus, using Mr. Turner's species as the genotype. This genus is closely allied to *Phlocteis* and it will suffice to tabulate the differences between the two.

XENITA.

(Genotype *keniensis*, n.sp.)

Cheeks un-armed.

Chin visible.

Chin-piece entire, nearly rounded.

Antennae serrate from the fifth joint.

Pronotum sub-orbicular.

Posterior angles of abdominal segments rectangular; general shape more elongate.

PHLOCTEIS.

(Genotype *quadricornis* Tairin.)

Cheeks armed with a wide, very obtuse tooth.

Chin visible, transversely carinate.

Chin-piece widely emarginate and very shortened at the middle, with a triangular lobe at each side.

Antennae serrate from the fourth joint.

Pronotum expanded and strongly angled behind.

Posterior angles of abdominal segments quite rounded; general shape more robust, elytra strongly and more distinctly carinate.

70. *Xenita keniensis*, n.sp. (Plate 15. Fig. 30.)

Length: 9.5 mm. Width 2.75 mm. Elongate, of a purple-black colour above, cupreous below; pronotum more cupreous.

Head convex, moderately wide; strongly furrowed from the vertex to the epistoma. Clothed in hairs grouped in tufts covering four, more or less distinct tubercles; lower surface delicately wrinkled. Interocular area as long as wide at middle, enlarged at summit. Epistoma very much constricted between antennal cavities, very slightly emarginate in front. Eyes medium-sized, projecting, and oval in shape. Antennae very short, serrate from the fifth joint; second joint almost globular, third and fourth

sub-equal, third less long than fourth. Pronotum one and a third as wide as long, widest behind the middle, anterior edge projecting at middle, delicately bordered by fine striae, anterior angles rounded; sides strongly convex; posterior angles widely rounded; base bi-sinuate with a wide and short median lobe. Disc semi-circularly excavated behind, with a median rounded depression; wrinkled at middle, rugosly punctate towards sides; at each side some distance from the lateral edge, and just before the middle, is a marked arcuate carina. Scutellum large, triangular. Elytra as wide at shoulders as the pronotum, widest before the posterior third, strongly sinuate from humeri to apical third, then acutely attenuate to the tips which are separately rounded and indistinctly serrate. Epipleural carina effaced in front. Disc rather widely excavated along the suture, clothed with a fairly distinct pubescence in a whitish design transversely; elsewhere inconspicuous. Pygidium armed with a median acute point. Underside sparsely pubescent, rather strongly sculptured; abdomen aciculary punctate; cheeks without a projection; chin-piece large and rounded. Prosternum rugose; prosternal process wide, bordered by a ledge, sub-parallel at sides; rounded at apex. Internal angle of posterior coxae widely rounded; external angle rounded and projecting. Intercoxal process of abdomen acute; suture of the first segments conspicuous and smooth at middle; four last sternites ornamented with a tuft of white hairs at anterior angles; last sternite sub-truncate, with lateral angles rounded; bordered by a groove; pleural edge very narrow; third and fourth sternites furrowed along pleural carina; pleural carina feebly projecting. Tibiae carinate outwards, rather straight; posterior ones rather flattened. Tarsi short with joints sub-equal, the last joint equal to the others together; claws lobate.

Kenya Colony: Soko Forest (H. J. Allen Turner, July, 1932). One specimen.

71. ***Chalcophlocteis dives macarthuri***, sub.sp. nov.

(Plate 15. Fig. 31.)

The type of *dives* was described from the Transvaal by Peringuèy. The sub-species differs in having a uniform colour above without a golden tinge on the pronotum and at apex of elytra; sides of the pronotum straighter and less expanded before the posterior angles; two posterior discal fossae of the pronotum more marked and more contiguous; middle of the pronotum distinctly depressed. I do not consider the two forms to be specifically distinct.

Kenya Colony: Ziواني (C. G. MacArthur, April, 1932). Type and co-type.

72. **Planidia velutina**, Kerr.

Ann. Soc. Ent. Belg., Vol. 43, p. 278, 1899.

(Type Locality: Abyssinia.)

Kenya Colony: Makuyu (C. D. Knight, November, 1927).

Several specimens of this species have been submitted to me by the Imperial Institute of Entomology.

73. **Gorcebus (Katonía) tricolour**, n.sp. (Plate 15. Fig. 32.)

Length: 8.25 mm. Width: 2.75 mm. Rather elongate, of a greenish aeneous colour, with a very large steel-blue spot on each elytra, beyond the middle, and with a red apex; clothed in places with a recumbent sparse pubescence and elsewhere with dark hairs. Posterior red spot separated from the steel-blue ones by a snow-white band. Under parts feebly pubescent, with prosternal epipleura, sides of metasternum and coxa densely clothed with whitish, rather long, recumbent pubescence.

Head strongly punctate and deeply furrowed, inflated at sides of furrow, and clothed, in fresh specimens, by erect tufts of pubescence. Front separated from the epistoma by a distinct arcuate carina, surmounting the antennal cavities. Epistoma large, widely emarginate in front, a little longer than wide. Interocular area widest at summit, with sides feebly arcuate, separated from the eyes by a superficial furrow. Eyes testaceous, regularly elliptic. Antennae serrate from fourth joint, scarcely reaching the middle of the pronotum, second joint very thick, a little longer than the third, the third a little longer than the fourth, and decreasing regularly to the apex. Pronotum widest at the middle, feebly bi-sinuate and bordered towards front, with anterior angles rather projecting; sides regularly rounded and feebly sinuate before the posterior angles which project slightly forward; lateral carina feebly sinuous and indefinitely crenate; basal median lobe deeply emarginate. Disc uneven, with a strong boss behind the middle of the pronotum; surface longitudinally crossed at middle by two parallel bands of black, erect, leaf-shaped pubescence. Scutellum very large cordiform, deeply excavated. Elytra wider behind the middle, a little wider at shoulders and wider than pronotum at base; humeral callosities rather projecting, narrowly elevated along the bases whilst the tips are conjointly and widely truncate and sharply serrate. Suture strongly elevated backwards; epipleural carina invisible. Disc rather strongly punctate, with the punctures less deep at the steel-blue and red spots. Pubescence of the fore-half intermingled with some white spots. Cheek toothed, chin rounded. Anterior edge of the prosternum without chin-piece. Prosternal process triangular, slightly excavated, wrinkled transversely, feebly pubescent and longitudinally arcuate.

Metasternum regularly sculptured. Abdomen feebly punctate, the last sternite sub-truncate and rounded at the apex, separated from the pleural edge by an entire groove. External angle of the posterior coxae hidden by pubescence. Tibiae straight, posterior trochanter pointed within; first joint of tarsi as long as next two together; tarsi nearly as long as two-thirds of tibiae, last joint as long as the three first ones; claws bifid.

This species belongs to a new sub-genus *KATONIA*, differing from the genus *CORAEBUS* in having the sides of the pronotum not distinctly crenate, epipleural carina of the elytra failing or tending to be obsolete, first joint of posterior tarsi as long as two following together, with the fifth as long as the three first; tarsi longer, and by the special character of the pubescence.

Ivory Coast: Type in my own collection, taken at Dimbroko.

Tanganyika Territory: Katona. One specimen.

Kenya Colony: Kaimosi (H. J. Allen Turner, March-April, 1932). One specimen.

74. ***Sambus montanus***, Kerr.

K. Schwed. Akad. Wiss Upsala, 1908, p. 26, pl. 1, f. 4.

(Type Locality: Kibonoto, Kilimanjaro.)

Kenya Colony: Meru, 5,000 ft., December, 1934; Ngong (A. F. J. Gedye, May, 1935).

75. ***Melibaeus albopilosus***, Kerr.

Ann. Soc. Ent. Belg., XLIII, 1899, p. 274.

(Type Locality: Tabora, T.T.)

Tanganyika Territory: Kesima, 11th October, 1934. One specimen.

The var. *montanus*, Kerr., K. Schewd. Akad. Wiss. Upsala, 1908, p. 24.

(Type Locality: Kibonoto, Kilimanjaro, is a simple aberration of the former.)

Kenya Colony: Lerogi, 9th October, 1934. One specimen.

76. ***Melibaeus violaceipennis***, n.sp. (Plate 16. Fig. 33.)

Length: 6 mm. Width: 1.75 mm. Thick-set, black with violaceous elytra; sides of pronotum, metathoracic epipleura, coxae, pleural edge of first two segments, sides of the third abdominal segment, ornamented with whitish pubescence.

Head medium-sized, angularly excavated in front, interocular area almost as long as wide at summit; feebly narrowed at base. Epistoma as long as wide at middle, widely and arcuately emarginate at front. Eyes rather large, narrowed towards summit, separated from the front by a deep and narrow

groove. Antennae short, reaching the level of the middle of the pronotum, serrate from the sixth joint, second joint thick, three following sub-equal. Pronotum a little less than one and a half times wider than long, widest towards the middle, more narrow in front than behind, nearly straight and distinctly bordered at anterior edge, with very inflated, acute and not very projecting anterior angles; sides convex in front, sinuate before posterior angles; lateral carina entire and very sinuous; posterior angles nearly rectangular; base almost straight at each side with a median truncate lobe. Disc abruptly declivious laterally in front and flattened towards posterior angles, with a median boss nearer to the base than the anterior edge, surface covered with deep irregularly arranged wrinkles. Scutellum rather large and somewhat circular. Elytra less wide at shoulders than prosternum at the base, rounded at the shoulders; humeral callosities very prominent and overhanging the epipleural carina; sides sinuate from shoulders to posterior third, then narrowing acutely to the tips which are separately rounded and slightly serrate. Abdomen visible from anterior fourth to after posterior third; pygidium visible, rounded at apex. Disc impressed at each side of the base; abruptly declivious at middle of each side, flattened along the suture. Epipleural carina entire and feebly distinct behind, surface strongly irrorated in front, less so at apex. Chin-piece divided into two wide rounded lobes, genal tooth obtuse. Prosternum rugose, prosternal process arcuate, longitudinally excavated and bordered by a little ridge. Abdomen feebly punctate, three last sternites bordered in front by a smooth band; last sternite rounded and not distinctly crenate. External angle of posterior coxae projecting outward and rounded at apex. Pleural carina arcuate on the first sternite, straight on the others; last three sternites together deeply grooved at sides and apex.

Kenya Colony: Kisii, Kavirondo (Miss Napier, September, 1933). One specimen.

77. ***Kamosia turneri***, n.sp. (Plate 16. Fig. 34.)

Length: 6.75 mm. Width: 2.35 mm. Piceous above with some slight pattern of the pubescence; bluish below.

Head feebly convex, furrowed on the vertex and the front; irregularly wrinkled, clothed with golden and black hairs; interocular area feebly narrowed after the middle. Epistoma constricted between ocular cavities, widely and rather deeply emarginate in front. Eyes moderately projecting. Antennae reaching just short of the middle of the pronotum, serrate from fifth joint. Pronotum widest toward the base, narrowed in front, one-fifth wider than long, bisinuate anteriorly with a marked

projection of the median lobe; sides feebly convex when viewed from above, with the lateral carina sinuous and entire; posterior angles rounded, base moderately emarginate at each side, with a large rounded median lobe. Disc very uneven, strongly excavated along the lateral margin, irregularly covered with yellowish pubescence forming a pattern; bottom irregularly and strongly wrinkled. Scutellum triangular, smooth. Elytra nearly twice as long as the width of both, rounded at shoulders, slightly sinuate at sides from humeri to posterior third, then convexly narrowed to tips which are separately rounded and delicately serrate. Chin dentate at middle; chin-piece divided into two large lobes. Prosternal process rugose, bordered laterally, sculptured longitudinally and very inflated behind. Prothoracic episternum concave, deeply grooved, the groove slightly removed from the lateral edge and accommodating the antennae when these are in repose. Lateral portions of the mesosternum inconspicuous. Metasternum very declivious in front, convex, and covered with projections; ornamented with two elevated crests towards intermediate coxae. Posterior margin pad-shaped. Posterior edge of posterior coxae slightly sinuous, external angle rounded and projecting slightly outward. Intercoxal process of first abdominal segment acute and wrinkled. Surface of first abdominal segment covered with wrinkles in an irregular pattern, four following segments smooth; first and second segments projecting at sides. Pleural edge separated from disc of segments by a ridge, third and fourth segments narrowly grooved along lateral ridge, last segment short and semi-circularly grooved, widely truncate at apex with lateral angles rounded; pleural edge wrinkled. Pygidium truncate and armed with ten little teeth of which the external ones are more robust. Legs grooved along the inferior edge; tibiae nearly straight; first four joints of tarsi short, sub-equal, transversely depressed; last joint equal in length to others taken together. Claws nearly parallel and strongly lobate.

I have provisionally placed this species in the genus *Kamosia*, but it differs from the geno-type in certain characters.

Kenya Colony: Nairobi (H. J. A. Turner, May, 1926). Two specimens.

78. ***Pseudagrilus beryllinus*, Fahr.**

Inst. Caffrar, I, 1891, p. 360.

(Type Locality: Limpopo.)

Kenya Colony: Naivasha (H. J. Allen Turner, May, 1936). One specimen.

79. **Pseudagrilus variabilis**, Thery.

Bull. Soc. Sc. Nat. Maroc., IX, 1929, 13.

(Type Locality: Harrar, Abyssinia.)

Kenya Colony: Kibwezi (Dr. van Someren, December, 1929). One specimen.

80. **Pseudagrilus zonatus**, Roth.

Wied. Arch. fur. Naturg., XVII, 1891, p. 119.

(Type Locality: Abyssinia.)

Kenya Colony: Kaimosi (H. J. A. Turner, March-April, 1932); Ngong (H. J. A. Turner, March, 1936). Two specimens.

81. **Preudagrilus sophorae**, Fab. (*sophoroides* Murray).

Ent. Syst., 1/2/92, p. 219.

(Type Locality: Guinea.)

Kenya Colony: Sabaki, Tana River (Turner-MacArthur, April, 1932). One specimen.

82. **Pseudagrilus hunti**, n.sp. (Plate 16. Fig. 35.)

Length: 6.6 mm. Width: 2 mm. Elongate, widest behind; greenish-blue in colour, head green in front, posterior femora golden-red, intermediate and anterior tibiae golden; underparts of a brighter and more shining colour; antennae black from third joint.

Head moderately large, convex, slightly furrowed on vertex, strongly wrinkled; intervals between the wrinkles salient and rounded; these wrinkles more or less circularly disposed around two centres on the vertex and transverse on the forehead; with a rounded more finely wrinkled tubercle at the middle; base slightly depressed. Epistoma abruptly projecting on to forehead, nearly twice as broad as long, slightly sinuate in front; interocular area slightly longer than wide, with sides nearly parallel. Eyes large, rather regularly elliptic, and slightly projecting. Antennae short, scarcely reaching the anterior edge of the pronotum; first joint robust, second ovoid, about twice as long as broad, third and fourth shorter than the second and equal in length, fifth and following lobate and acute. Pronotum a little less than one and a half times as wide as long, widest at base, bordered by a shining ridge and rather strongly bi-sinuous in front, with the anterior angles projecting forward, acute and depressed; sides feebly convex and bordered by an entire sinuous projecting carina; posterior angles projecting slightly outwards and rectangular in shape. Base widely bi-sinuate, with a median emarginate lobe. Disc covered with raised wrinkles arranged circularly around the middle of the anterior edge, and transversely behind. Surface rather regularly convex, obliquely

impressed at each side. Upper carina smooth, strongly arcuate, extending from posterior angles towards anterior ones but becoming obscure at anterior fifth. Scutellum rather large, convex in front, straight behind, with a smooth acute process in the middle. Elytra two and a half times as long as wide, widest at posterior third, strongly rounded at shoulders, feebly sinuate from humeri to apical third then acutely attenuate to tips which are widely and sub-conjointly rounded with the apical edge finely serrate. Epipleural carina very thin and feebly projecting in front. Very strong and sharp from level of posterior coxae to apex; epipleural wide behind. Disc widely excavated on the basal lobe, and elevated in front into a carina; humeral callosities rounded and rather projecting, posteriorly prolonged by a straight carina distinctly visible when viewed from the side, extending beyond the level of the posterior coxae. Suture slightly bordered behind; strongly and very regularly irrorated on the surface. Chin-piece large and entire. Prosternum very convex, rugose; prosternal process deeply concave, curved behind; middle of the metasternum with an oval, smooth-bottomed fovea; posterior margin of posterior coxa very widely emarginate; last abdominal segment rounded, with long hairs, grooved along the edge; pleural margin golden, nearly smooth with the sides finely and regularly crenate.

Kenya Colony: Kisii (D. Buxton, November, 1933). One female. Nairobi (A. F. J. Gedye, January, 1933). One specimen.

83. ***Agrilus grandis*, C. & G.**

Mon. Bup., Vol. 2, p. 5, pl. 1, f. 3, 1839.

(Type Locality: Senegal.)

Kenya Colony: Athi Falls (A. F. J. Gedye, November, 1934). Two specimens. Ngong (Dr. van Someren, December, 1938).

Specimens from Kenya are similar to those from South Africa, but the two first spots of the middle of the elytra are frequently contiguous, thus forming a band.

84. ***Agrilus somereni*, sp.n. (Plate 16. Fig. 36.)**

Length: 13 mm. Width: 3.9 mm. Very elongate, dull blackish above, shining blue-black below; head cupreous, each elytron ornamented with two small whitish spots close to the suture, one before the middle, the second at the posterior fourth; underparts ornamented with white spots. Head moderately large, finely and longitudinally wrinkled, wrinkles becoming less distinct and transverse in front; interocular area widest at middle, notably longer than wide, feebly constricted at base; ornamented at each side close to the middle of length of the eyes with a

little depression, this bordered outwardly by a small ridge. Epistoma scarcely wider than long, deeply emarginate in front, separated by a carina. Eyes large, elliptic, almost twice as long as wide, moderately projecting and not protruding beyond the convexity of the head.

Antennae rather short, and not reaching the anterior coxae, second joint almost twice as long as wide, a little longer than the third, fourth longest of all, angularly lobate, the serration becoming rounded at apex from fifth joint. Pronotum a little more than one and a half times as wide as long; widest a little before the base, and slightly narrowed in front; anterior edge very feebly bi-sinuate, and margined; anterior angles slightly protruding, sides nearly straight at fore part and slightly narrower at posterior angles; lateral carina entire and slightly undulating; upper carina very arcuate and joining the lateral carina at middle; lower carina united with lateral ones toward the base and slightly divergent at the front; posterior angles very obtuse. Disc longitudinally, very widely, and deeply excavated at middle; widely furrowed along the upper carina backward, and along lateral carina forward; surface covered with transverse, bi-arcuate superficial wrinkles. Scutellum very large, sub-cordiform, feebly bi-sinuate in front, prolonged behind; transversally bi-arcuate; feebly impressed.

Elytra a little less wide than pronotum at base, sinuate from shoulders to posterior third, then more or less straight to the tips which are separately rounded and regularly serrate. Epipleural carina distinct at base only; epipleural lobe triangular. Disc very strongly carinate, the carina reaching from humeral callosities to near apex; sutural carina projecting, entire, and without sutural tooth. Surface clothed with brown inconspicuous recumbent pubescence. On each elytron close to and within the costa are two little white spots of which the first is placed in front of the middle point and the second towards the posterior fourth. Chin-piece entire, separated from the prosternum by a small deep furrow. Mesosternum rugose, feebly pubescent; prosternal process large, flat and slightly expanded at apex. Prothoracic episterna clothed with infrequent dense recumbent white pubescence. Middle of the metasternum wrinkled in front, smooth behind; sides pubescent, the pubescence reaching nearly to the edge. Abdomen deeply and regularly punctate, very shiny. Intercoxal process of the first segment wide, terminating in a small point. All sternites ornamented at each side, close to the anterior edge and not far from the lateral margin by a rather deep depression which is covered with white recumbent pubescence. Pleural carina almost obsolete on the first segment. Last segment longer than wide, grooved along the edge; pleural

edge strongly serrate. Anterior and intermediate tibiae slightly arcuate, posterior ones straight and irregularly crenate; posterior tarsi nearly as long as the tibiae, first joint longer than the following combined.

Considering the form of the interocular area, slightly constricted at the base, the shortness of the antennae, the rounded apical abdominal segment, the specimen just described would appear to be a female, but the anterior curved tibiae and the crenate posterior edge of the posterior tibiae are those of a male.

Kenya Colony: Kitale (Dr. van Someren, July, 1932). One male.

85. ***Agrilus vincentae***, n.sp. (Plate 16. Fig. 37.)

Length: 8.5 mm. Width: 2.2 mm. Rather elongate, widest at posterior third, of a bluish-green colour above, with the base of the front and epistoma cupreous-red; cupreous-green below; upper part glabrous, with the exception of a fascia, a rounded spot at middle of each elytron toward the anterior third of the length and an apical silvery-white spot covering the apex. Prothoracic episterna and coxae clothed with compact, recumbent, rather long pubescence. Part of the two first abdominal sternites visible from above also pubescent; abdomen sparsely covered with very short recumbent pubescence.

Head rather large, strongly furrowed from vertex to epistoma; the furrow lined at the bottom, sides of the furrow strongly convex and projecting, sparsely punctate; interocular area a little longer than wide, with sides nearly straight and slightly divergent toward the summit.

Epistoma nearly twice as wide as long, separated from the front by a small carina; widely emarginate in front. Eyes rather large, regularly elliptic, very convex and forming a curve different to that of the head. Antennae reaching nearly to the middle of the length of the pronotum, lobate from the fourth joint, second joint twice as long as the third, third sub-equal to the fourth. Pronotum, one-fifth less wide at summit than at base, widest at anterior fourth; strongly bi-sinuate and distinctly bordered in front, with anterior angles strongly projecting. Sides arcuate in front and sinuate behind with posterior angles projecting outward. Lateral carina feebly sinuous; upper carina very arcuate, reaching the lateral carina towards the middle; lower carina feebly undulating and entirely separated from the lateral carina; posterior angle nearly straight; base deeply sinuate at each side, with a wide, truncate and scarcely emarginate median lobe. Disc very uneven with the middle of the anterior margin carrying a thick ridge with sides very

declivious toward the anterior angles; posterior half of disc rather strongly excavated, with two wide hollows situated at the middle and with a furrow along the upper carina. Surface smooth, with some large punctures and wrinkles in the base of the hollows which are slightly pubescent. Scutellum three times as wide as long. Elytra not quite as wide at shoulders as the pronotum at base, three and a half times as long as wide, conjointly; widest at posterior third; laterally sinuate from shoulders to posterior third then straightly narrowed to tips which are separately and widely rounded and finely serrate, sharply carinate along the base. Humeral callosities rather prominent; epipleural carina entire and feebly projecting, with a triangular epipleural lobe. Disc widely and triangularly impressed at base, a little swollen at each side of the scutellum, slightly excavated below the pubescent spots, along the suture and along the posterior lateral margin behind; middle of disc longitudinally flattened; surface rather rugose. Chin-piece deeply and angularly emarginate. Prosternum convex, with posterior external angle of posterior coxae feebly acute. Pleural carina entire and very prominent; sides of sternites deeply and narrowly furrowed along the pleural carina; last sternite rounded at apex, semi-circularly grooved with pleural edge somewhat serrate. Anterior and intermediate femora deeply sinuate towards apices, the tibiae of same legs arcuate. Posterior tarsi a little more than half the length of the tibiae.

Uganda: Mawakota (Dr. van Someren, June, 1931). One female.

86. *Agrilus jinjaensis*, n.sp. (Plate 16. Fig. 38.)

Length: 10 mm. Width: 2.5 mm. Elongate, very narrowed posteriorly; elytra rounded at apex and rather serrate; of a deep steel-blue colour above, except for the forehead and sides of the pronotum which are aeneous; lower surface glabrous, shiny and aeneous in colour.

Head rather wide, deeply furrowed from the vertex to epistoma; covered with longitudinal striae on the vertex and transverse striae in front, with the bottom of the grooves smooth. Interocular area appreciably longer than wide, slightly and arcuately constricted towards the base. Epistoma separated from the front by a carina; wider than long, emarginate at anterior edge. Eyes very large, almost twice as long as wide; rather regularly elliptic, projecting and in line with the curve of the head. Antennae short, scarcely reaching the middle of the pronotum; lobate from the fourth joint, second and third joints subequal, fourth a little longer than the third. Pronotum a little less than one and three-quarters as wide as long; almost straight

and finely bordered in front with a few projecting angles; sides straight and almost parallel, slightly narrowed towards posterior angles which are obtuse. Basi-sinuate at each side with a wide truncate median lobe. Lateral carina straight; upper carina short, very arcuate and projecting and forming a swelling at each side of the pronotum, reaching the lateral margin towards the middle; lower carina united with the lateral carina at the base, and divergent forward. Disc finely, densely, and transversely wrinkled; feebly impressed in front of the scutellum; furrowed along the upper carina. Scutellum wider than long, transversely carinate. Elytra as wide at the shoulders as the pronotum at the base; straightly enlarged from humeri to posterior third then narrowed to the tips which are separately and narrowly rounded and finely serrate. Disc excavated behind humeri, very superficially sculptured with the tip of each elytron separately convex. Chin-piece entire, rounded; anterior edge of prosternum arcuate with the disc convex; prosternal process separated by a superficial transverse furrow, flat, irrorated, bordered and completely rounded at apex. Lateral angles of posterior coxae projecting and rounded; intercoxal process of first sternite rectangular. Abdomen slightly punctate; sternites with a posterior smooth margin; pleural carina entire, last sternite longer than wide, grooved also along the posterior edge, clothed at apex with some semi-erect white hairs, visible when viewed in profile. Pleural edge regularly crenate and armed at middle with a strong point, invisible from above. Tibiae straight, anterior edge of posterior tibiae sinuous; (tarsi wanting).

Uganda: Jinja (Dr. van Someren, June, 1936). One female. A second specimen, in poor condition, taken in the same locality in October, 1930, differs from that described in having a black forehead and greenish-cupreous underside. The posterior tarsi are equal to three-fourths of the tibia, the first joint is equal to the three following put together.

This new species belongs to the little group represented by *A. hastulatus*, Fahr., from Natal; it is close to *A. ghesquieri*, Théry, from the Congo.

87. *Agrilus gedyei*, n.sp. (Plate 17. Fig. 39.)

Length: 5.8 mm. Width: 1.6 mm. Moderately elongate, of a brown aeneous colour with a large bluish-black spot covering the middle of the posterior part of the elytra and two spots of the same colour on each side of the suture towards the anterior fourth; ornamented also with some small white spots of white pubescence and a transverse fascia of brown pubescence intermixed with white hairs toward the posterior third. Head

moderately large, furrowed from vertex to the middle of the front; slightly expanded at each side of the vertex and covered with semi-circular wrinkles; feebly sculptured in front and clothed with a brownish pubescence forming a rosette. Inter-ocular area wider than long, and one-fifth wider at summit than at base, with straight sides. Epistoma almost as wide as long separated from the front by an angulate and feebly elevated carina. Eyes elongate, rather regularly elliptic, projecting slightly beyond the curve of the head. Antennae rather short, not reaching the middle of the pronotum; angular-lobate from the fourth joint; second joint robust, a little longer than the third. Pronotum wider than length by a third, widest at the base, a little less than a fifth wider at base than in front; nearly straight in front and not distinctly bordered; with anterior angles moderately projecting. Sides feebly arcuate in front, straight and sub-parallel behind, with posterior angles rectangular. Lateral carina entire, nearly straight, feebly arcuate towards anterior angles. Upper carina strongly arcuate at base, becoming divergent forward, and nearly reaching the middle of the length of the pronotum. Lower carina united with the lateral ones at the posterior third. Base sinuate at each side with a feebly emarginate median lobe. Disc rather uneven, transversely depressed on the posterior half, the depression continuing at each side towards the anterior angles. Anterior half depressed at middle; surface clothed with some sparse whitish recumbent hairs and covered with semi-circular reticulate wrinkles. Scutellum considerably wider than long, transversely carinate, straight in front, semi-circular behind with a narrow central point. Elytra a little less than three times as long as this width, scarcely wider at humeri than pronotum at base, with humeral callosities projecting slightly and not overhanging the epipleural carina; nearly straight up to the middle, widest at posterior third then attenuate to the tips which are separately and narrowly rounded with posterior edge finely serrate. Basal margin strongly and sharply carinate. Epipleural carina very distinct at base, hidden behind by the edge of the elytra. Disc very irrorated. Underside distinctly pubescent; chin-piece entire; prosternum convex, prosternal process flat, wide, short, and rounded at apex. Abdomen rather strongly punctured, with the anterior and posterior edges of the segments smooth; epipleural carina entire and projecting, bi-arcuate from the third to fourth sternites, sides of the third and fourth sternites grooved between the disc of the sternite and the pleural edge, widely subtruncate and irregularly crenate at apex, bordered behind by semi-erect long hairs; the pleural edge wrinkled and without denticulation. Posterior

lateral angle of posterior coxae rounded, tibiae very slightly arcuate, posterior tibiae shorter than others by a third (female).

Kenya Colony: Nairobi (MacArthur, July, 1934). One female. Another specimen also from the same locality, captured by Mr. A. F. J. Gedye, August, 1934. The specimen taken by Mr. Gedye is a little wider than the type, but I think both are females. The latter specimen has the median lobe of the pronotum, truncate.

88. *Aphanisticus gedyei*, n.sp. (Plate 17. Fig. 40.)

Length: 3.6 mm. Width at middle of pronotum, 1.27 mm.; at posterior third of elytra, 1.25 mm. Rather elongate, of a black aeneous colour above, and underparts more aeneous than upper; easily recognisable by its large sub-globular pronotum.

Head very small, sub-globular, furrowed in front and triangularly impressed on the vertex, covered with very sparse, deep umbilicate punctures arranged principally on the cheeks and front, with the base of the depressions finely irrorated. Interocular area wider than eye, with sides very acute. Eyes very small, regularly elliptic, not salient. Epistoma triangular, surmounted by two rounded pores. Antennae reaching the middle of the pronotum, with the first segment lodged in the groove on the cheeks, the last four segments forming a club, the last segment being the largest. Pronotum very convex, widest at middle, very feebly bi-sinuate in front, with anterior angles slightly projecting and obtuse. Sides rounded towards front, slightly sinuate distally, with the posterior angles obtuse. Lateral carina entire and nearly straight; base straight at each side with a small rounded median lobe. Disc very finely irrorated at the base, covered with sparse yet strong punctures. Posterior angles deeply and roundly excavated. Scutellum small, triangular. Elytra as wide at shoulders as base of pronotum, sinuate from humeri to the middle, then acutely attenuate to the tips which are separately rounded. Epipleural carina sharp and forming a groove toward the base, less distinct toward the apex; base transversely grooved. Disc longitudinally flattened at the middle with a tectiform suture; surface linearly punctate with slight longitudinal ridging, visible only in profile; with intervening lines feebly and transversely wrinkled. Prosternum convex, very sparsely and irregularly yet deeply punctate, punctures umbilicate; prosternal process wide, feebly arcuate and convex, with the apex subtruncate. Prothoracic episterna swollen, with a deep longitudinal cavity in the middle of each side, for accommodating the club of the antennae. Abdomen almost smooth, covered with very sparse, superficial, elongate, umbilicate punctures. Second sternite longer than the

two following put together; last sternite semi-circularly grooved, pleural margin feebly and angularly emarginate at middle and very finely and closely denticulate. Pleural carina entire and feebly salient. Femora excessively wide, grooved at the edge, to accommodate the tibiae and tarsi which in repose are invisible.

Kenya Colony: Nanyuki, December, 1935; paratype at Nairobi (A. F. J. Gedye, May, 1936).

89. **Aphanisticus dimorphus**, n.sp. (Plate 17. Fig. 41.)

Length: 2.9 mm. Width 8 mm. Elongate, of a black aeneous colour slightly shiny, as large at the middle of the pronotum as at shoulders and at the posterior third of the body. Surface microscopically irrorated.

Head very large, strongly excavated between the eyes, the depression closed in front, rounded behind, with a little rounded pore in the bottom. Eyes well removed from the edge of the pronotum, anterior edge parallel carinate and not projecting forward, upper half visible from above, slightly projecting, lower half curved below. Cheeks swollen; face curved below and not visible from above. Pronotum widest at middle, straight in front with anterior angles rather projecting forward; sides feebly expanded and rounded with lateral carina feebly arcuate and very finely crenate, with posterior angles feebly obtuse and rounded; base with a median rounded lobe. Disc very uneven with sides flattened, the middle with four protuberances of which the two anterior ones are the last; posterior angles very deeply excavated. Scutellum very small. Elytra a little wider at the shoulders than the pronotum at base, slightly attenuate from middle to tips which are separately and obliquely truncated and very finely crenate. Epipleural carina sharp, entirely visible from above. Disc impressed at the base and sides, with a very elevated suture and with a rather distinct carina reaching from the middle of the base to the apex; interval between the suture and the median carina deeply sculptured along the posterior half. Antennal cavities wide and separated by a small ridge. Epistoma triangular, with the anterior edge rounded and bordered in front by a small groove. Antennae filiform and terminated by a club of four segments; the shaft of the antenna lodged in a genal scrobe, with the club approximated to the prothoracic episterna without an accommodating groove. Prosternum very large, with triangular raised area in the middle; apex of prosternal process strongly expanded and rounded behind. Abdomen clothed with a few cinereous hairs. Pleural carina very fine. Prosternal angles of the fifth sternite very acute and projecting backwards; pleural edge of the fifth

sternite very wide, truncate and feebly emarginate at middle, separated from the sternite by a stria. Femora very thickened and deeply sculptured for the reception of the anterior two-thirds of the tibiae.

Uganda: Kampala (A. F. J. Gedye, December, 1920). One male (type); paratype female, taken at same time.

On general appearance the female might seem to belong to another species; it differs from the type in having a more robust and wider shape; the frontal excavation is not closed in front, the longitudinal median costae of elytra are more distinct with rudiments of two others; the transverse rugosities of elytra more developed.

90. **Aphanisticus nasutus**, Théry.

Bull. Soc. Sc. Nat. Maroc, 1929, p. 174.

(Type Locality: Atshoz, Mt. Da, Mahagi, Belgian Congo.)

Kenya Colony: Muhoroni (H. J. Allen Turner, March, 1930). One specimen.

91. **Galbella turneri**, n.sp. (Plate 17. Fig. 42.)

Length: 4.45 mm. Width: 2.42 mm. Oval, very shiny, of a dark steel-blue above; black below, with tarsi testaceous, entirely glabrous with exception of a transverse, indistinct white pubescent spot at middle of first and second sternites, the spots not united. Eyes ivory-white in colour.

Head as large as the pronotum in front, regularly convex and feebly sub-truncate in front, rather strongly and regularly punctate. Interocular area two and a third times as wide at base as at summit; with side very arcuate; a little wider at base than long. Eyes partially hidden by the pronotum, the visible part very narrow. Antennae lying in a deep groove of the prothoracic episterna, and quite invisible. Pronotum widest at base, almost two and a half times as wide at base as at summit, a little more than two and three-quarters as wide as long, arcuately emarginate and bordered in front, with sides arcuately rounded. Posterior angles very acute and surrounding humeri; lateral carina very feebly arcuate, visible when viewed from above from the anterior fourth to the base. Base bi-arcuate. Disc regularly convex, without impression except for a superficial furrow extending along the lateral carina from the anterior angles to the posterior fourth; surface very finely punctate, with two or three lines of transverse punctures behind the anterior edge and two similar ones with punctures more closely arranged near the base. Scutellum triangular, very small. Elytra widest at humeri, a little less than one and a half times long as wide

together; arcuately attenuate from humeri to tips which are conjointly rounded. Epipleural carina sharp and visible from above from humeri to apical third, where they are obscured by the sides of the disc. Suture rather elevated behind. Disc regularly convex, with humeral callosities strongly projecting; superficially furrowed at each side of the suture, behind; surface covered with a few rows of punctures. Chin rounded in front and strongly punctate. Anterior edge of prosternum arcuate and bordered. Disc nearly smooth, sides delicately wrinkled. Antennal groove parallel at sides of the prosternum. Prosternal process convex, bordered by a fine stria rounded at apex. Metasternum rather strongly and regularly punctate in front and less so behind. Abdomen finely ornamented by a few punctures, slightly rugose below the two pubescent spots. Segments feebly and widely excavated at each side, with anterior angles of the free segments rounded, and the posterior ones projecting; last segment surrounded by three or four deep striae with the edge regularly and densely serrate at each side; with a wide obtuse tooth at the middle. Internal apical angle of posterior coxae forming a shiny callosity. Tibiae transversely flattened, with posterior edge strongly rounded, posterior ones very delicately ciliate.

Kenya Colony: Sokoke Forest (H. J. A. Turner, July, 1932). One female (type).

This species is very much less wide than *Galbella somereni*, Théry, also from East Africa. The anal sternite is without long hairs at the apex and has three to four striae instead of one. It differs from *G. jeanneli*, Théry, from Thika Falls, by the last abdominal segment being serrated at sides.

Genus *TRACHYS*, Fab.

Certain species of *Trachys* from Kenya and Kilimanjaro were described by Kerremans in "Voyage d'Alluaud et Jeannel." Subsequently, Dr. Obenberger, wishing to make a revision of Kerremans's work requested the Museum d'Histoire Naturelle to allow him to examine the specimens. Paratypes, but not the types, were forwarded. Now Obenberger has united some definitely distinct species and his determination of the paratypes is without value. Reference to this is to be found in my own "Report on the Buprestidae from Omo River"; Rev. Franc. d'Ent., 1939.

92. *Trachys kraatzi*, Kerr.

Ann. Soc. Ent. Belg., Vol. 43, p. 297, 1899.

(Type Locality: Camerum.)

(*T. comitessa*, Kerr.; *T. masoni*, Théry, Synms.)

This species, which seems to be common, is represented by the following: Ngong, May, 1930, Nairobi, July, 1921 (A. F. J. Gedye); Kisumu, April, 1916 (H. J. A. Turner).

93. **Trachys schoutedeni**, Kerr.

Rev. Zool. Afric., 11, fasc. 1, 1912, p. 14.

(Type Locality: Congo da Lamba, Congo Belge.)

Kenya Colony: Nairobi (Dr. van Someren, November, 1928) and by Rev. J. W. Hunt, Nairobi, October, 1923). They have been compared with specimens previously compared with the type.

94. **Trachys circumdatus**, Kerr.

K. Schewd. Akad. Wiss. Upsala, 1902, p. 29, pl. 1, fig. 8.

(Type Locality: Kibonoto, Kilimanjaro.)

Kenya Colony: Chania Falls, Thika (A. F. J. Gedye, January, 1921).

95. **Trachys montanus**, Kerr.

l.c. p. 30, 1902.

(Type Locality: Kibonoto, Kilimanjaro.)

Uganda: Kampala, December, 1920.

Kenya Colony: Kisumu (A. F. J. Gedye, November, 1920). Appears to be a common species.

96. **Trachys jeanneli**, Kerr.

Voyage d'Alluaud et Jeannel, 1914, p. 240.

(Type Locality: Tiwi, Ramisi River, Kenya Coast.)

Uganda: Kampala (A. F. J. Gedye, December, 1930). One specimen.

97. **Trachys denti**, n.sp. (Plate 17. Fig. 43.)

Length: 2.7 mm. Width at base of pronotum, 1.4 mm.; at shoulders, 1.5 mm.; at posterior third, 1.55 mm. Rather short, squat, widest at posterior third, of a steel-blue colour above; black below.

Head about a third less wide than the base of the pronotum, covered with superficial, umbilicate cicatrices, more distinct along the base; rather deeply excavated in front, longitudinally furrowed, with the internal edges of eyes sharply elevated and with the first antennal joint visible from above. Interocular area wider than long, widest at summit. Epistoma wide and deeply emarginate. Eyes small, projecting slightly, reniform. Antennae not reaching the middle of the pronotum, serrate from the fifth segment, second segment very robust, two following,

sub-equal. Pronotum more than two and a half times wider than long; feebly bisinuate in front, anterior projecting slightly with the angles acute but rounded at the apex; lateral carina feebly arcuate with posterior angles obtuse. Base sinuate at each side with a rounded median lobe. Disc nearly smooth, clothed at each side with some very inconspicuous recumbent hairs, widely furrowed along the base. Scutellum very small, triangular. Elytra wider at shoulders than pronotum at base, with humeral callosities strongly projecting, and overhanging the epipleural carina at base; sides nearly straight and sub-parallel from humeri to posterior third then rapidly narrowing to tips which are conjointly rounded. Epipleural carina entire. Disc bordered at base by a ridge, widely excavated at base, very declivous towards sides and apex, linearly, and very coarsely punctate and clothed with inconspicuous semi-recumbent hairs. Underpart sparsely clothed with whitish hairs. Chin triangular; posternal plate expanded behind, external angle of posterior rounded at apex. Pleural carina entire; first sternite without groove along pleural carina, the next three with a straight groove along the pleural carina, the last sternite surrounded behind by a groove. Palpi and tarsi slightly testaceous, claws black.

Kenya Colony: Gura River, 7,500 ft. (R. E. Dent, August, 1929). One specimen (type).

98. ***Trachys gedyei*, n.sp.** (Plate 18. Fig. 44.)

Length: 2.75 mm. Width: 1.8 mm. Rather short, arcuately narrowed from shoulders to summit, of a slight aeneous colour, clothed with yellowish, dense woolly pubescence forming spots and fasciae at sides of elytra and towards the apex. Head a little wider than half the width of the base of the pronotum, covered with sparse, small, superficial umbelicate cicatrices, a little depressed, longitudinally furrowed in front; anterior edge of eyes rounded. Interocular area wider than long, widest at summit. Epistoma surmounted by a rough plate ill-defined behind, widely emarginate in front, the emargination flat in the bottom and feebly narrowed forward. Eyes not very large, regularly elliptic, slightly projecting. Antennae very short, reaching just beyond the anterior edge of the pronotum, serrate from the seventh segment. Pronotum one and seven-tenths as wide at base than in front, slightly bi-sinuate in front, with anterior angles slightly projecting. Sides feebly arcuate, with posterior angles feebly acute and projecting backwards slightly. Lateral carina feebly arcuate; base rather deeply bi-sinuate with a rounded median lobe. Disc rather even, feebly depressed towards posterior angles and along the base, irregularly clothed

with rather long woolly hairs, with along the anterior and posterior margins a row of umbilicate depressions. Scutellum very small, triangular. Elytra scarcely wider at shoulders than pronotum, feebly sinuate from shoulders to middle then abruptly narrowed to tips which are conjointly and obtusely rounded. Epipleural carina not distinct except at humeri. Disc convex, rather slanting towards the sides and apex, with humeral callosities rather projecting; feebly excavated at the base; covered with a large superficial obscure puncturation and clothed with woolly hairs forming principally a transverse spot at each side, and two irregular marks behind. Underparts sparsely clothed with greyish hairs, long on the abdomen. Chin triangular. Prosternal process wide, very sparsely and superficially punctate. Prosternal plate expanded behind and furrowed at apex. Internal angle of posterior coxae acute and projecting. Pleural carina entire and rather salient. Sides of sternites without lateral groove, last sternite surrounded behind by a groove, and rounded at apex. Palpi and tarsi bright yellow, fifth segment and claws black. Tarsi short, with fifth segment as long as the four preceding together.

Kenya Colony: Nairobi (A. F. J. Gedye, May, 1936). One specimen (type).

99. ***Trachys nairobiensis***, sp.nov. (Plate 18. Fig. 45.)

Length: 2.7 mm. Width: 1.6 mm. Rather thick, rapidly narrowed from humeri to tips. Aeneous with yellow pubescence forming a pattern on the elytra.

Head very large, equal to two-thirds the breadth of the pronotum at base, feebly depressed in front and longitudinally furrowed and indistinctly sculptured and clothed with woolly hairs. Epistoma emarginate in front, nearly twice as wide as long, surmounted by a rugose plate distinctly separated from the hind part by a rounded depression. Interocular area very large, widest at summit. Eyes small, hardly visible from above. Antennae reaching the middle of the pronotum. Pronotum a little more than two and a half times as wide as long, very feebly bi-sinuate in front, with anterior angles slightly projecting, sides feebly arcuate forward and bluntly curved towards posterior angles. Lateral carina sharp, nearly straight, with posterior angles nearly rectangular, base feebly sinuate with the median lobe rounded and projecting. Disc rather convex, feebly and semi-circularly furrowed behind, very feebly sculptured, and clothed with long woolly yellowish hairs. Scutellum rather large and triangular. Elytra as wide as the pronotum at base, with the humeral callosities projecting, feebly sinuate at sides from shoulders to middle then rapidly narrowing to the

tips which are conjointly rounded. Epipleural carina distinct. Disc rather sloping at sides and toward the apex, feebly sculptured at each side along the base and depressed behind shoulders; covered with a superficial indistinct alveolar punctures and clothed with woolly yellowish hairs forming a transverse and oblique pattern. Underparts sparsely clothed with whitish hairs, longer on the abdomen. Prosternal process convex, moderately narrow. Prosternal plate feebly punctate, expanded behind and around the apex. External angle of posterior coxae sub-acute and only projecting slightly; pleural carina entire and hardly projecting; sides of the sternites without lateral groove but posterior angles obliquely incised at apex, last sternite surrounded behind by a very narrow groove, rounded at apex with a slight raised area at the middle of the edge. Palpi and tarsi brownish.

Kenya Colony: Nairobi (A. F. J. Gedye, August, 1939). One specimen (type).

100. ***Trachys abyssinicus***, Théry.

Ann. Bull. Soc. Ent. Belg., LXVII, 1927, p. 40.

(Type Locality: Abyssinia.)

Kenya Colony: Nairobi (A. F. J. Gedye, August, 1935). Three specimens.

101. ***Trachys ngongensis***, sp.nov. (Plate 18. Fig. 46.)

Length: 3.25 mm. Width: 1.5 mm. Moderately narrowed from shoulders to apex, of a dark aeneous colour, regularly clothed with a silvery white stiff erect pubescence, each hair curved at tip.

Head a little less wide than two-thirds of the base of the pronotum, feebly depressed in front, longitudinally furrowed, and covered with a few distinct rounded depressions. Epistoma very wide, finely irrorated but not forming a distinct plate, deeply depressed in front with the hollow narrowed anteriorly. Antennal cavities surmounted by a transverse pore. Interocular area more than twice as wide at summit than long. Eyes small, sub-reniform, feebly projecting and distinctly visible from above. Antennae hairy, reaching the middle of the pronotum, second segment very thick, third as long as the second, and a little longer than the third. Pronotum two and a half times wider than long, widely sinuate in front, with anterior angles rather projecting; sides feebly arcuate forwards, and straight behind; lateral carina sharp and nearly straight, posterior angles obtuse, base feebly bi-sinuate with median lobe rounded; disc superficially and semi-circularly sculptured towards posterior. Elytra as wide as the pronotum at base, with humeral callosities

projecting, feebly emarginate at each side from shoulders to middle, then moderately and gradually narrowed to tips which are conjointly rounded. Epipleural carina not very distinct. Disc rather sloping at sides and at apex, feebly depressed at each side at base and behind shoulders with superficial alveolar punctures and with the pubescence uniformly disposed and not forming a pattern. Underparts sparsely clothed with whitish short hairs. Chin triangular, prosternum convex, shining; prosternal plate rather large, with parallel sides but rounded behind. Metasternum deeply emarginate in front, strongly convex at middle. Posterior coxae furrowed with their external angle feebly acute. Abdominal process widely rounded; pleural carina fine; sides of the first four sternites without a groove, last sternite rounded at apex and grooved. Palpi and tarsi black.

Kenya Colony: Ngong (A. F. J. Gedye, May, 1936). One female (type).

LIST OF FIGURES.

- Fig. 1. ACMAEODERA KENIENSIS, Sp. nov.
 2. " ARGENTOSA, Sp. nov.
 3. " TURNERI, Sp. nov.
 4. " KAIMOSIANA, Sp. nov.
 5. AGELIA SMYTHI, Sp. nov.
 6. IRIDOTAENIA SOMERENI, Sp. nov.
 7. LAMPETIS MACARTHURI, Sp. nov.
 8. SPHENOPTERA (STROBILODERA) MACARTHURI, Sp. nov.
 9. " (GEDYELLA) 10-COSTATA, Sp. nov.
 10. " MINUTA, Sp. nov.
 11. " OBESA TANAENSIS, Subsp. nov.
 12. " RABAIENSIS, Sp. nov.
 13. " SABAKIENSIS, Sp. nov.
 14. " GEDYEI, Sp. nov.
 15. " CAUDATA, Sp. nov.
 16. " PLUMBIVENTRIS, Sp. nov.
 17. " SOMERENI, Sp. nov.
 18. ANTHAXIA CALLICERA, Gerst.
 19. " MACARTHURI, Sp. nov.
 20. " TURNERI Sp. nov.
 20a. " TURNERI (abdominal segment)
 21. " NAIROBIENSIS, Sp. nov.
 22. " KENIAE, Sp. nov.
 23. " SMARAGDICEPS, Sp. nov.
 24. " CHYULUENSIS, Sp. nov.
 24a. " (heads of 23 and 24)
 25. CHRYSOBOTHRIS GEDYEI, Sp. nov.
 26. " MACARTHURI, Sp. nov.
 27. " GELHARDTIANA, Sp. nov.
 28. ACTENODES GABONICA JOHNSTONI, Subsp. nov.

PLATE 10.

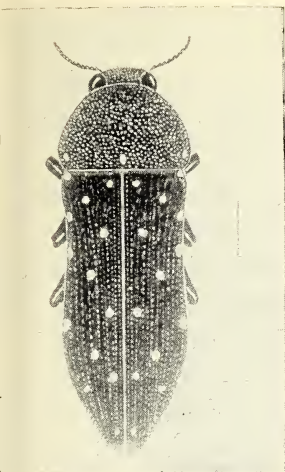


FIG. 1.

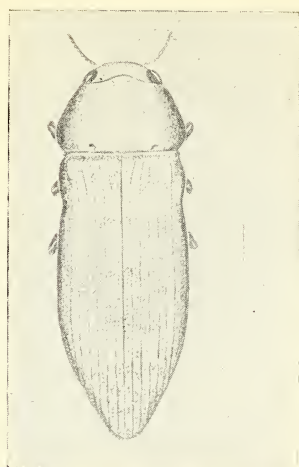


FIG. 2.



FIG. 3.

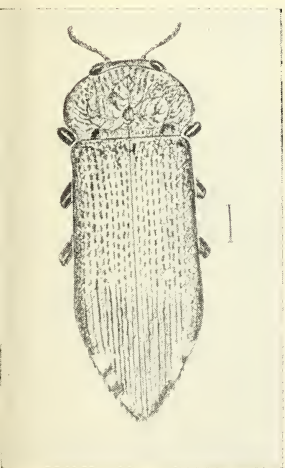


FIG. 4.

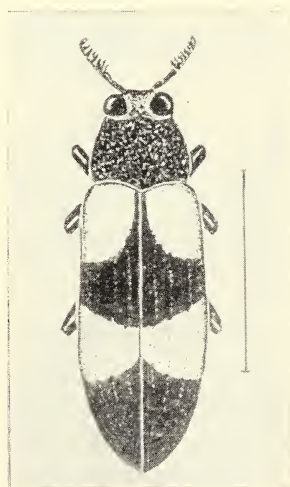


FIG. 5.



FIG. 6.

PLATE 11.

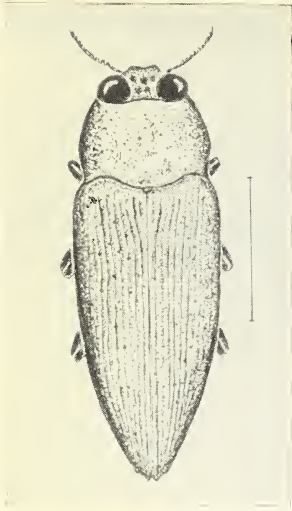


FIG. 7.

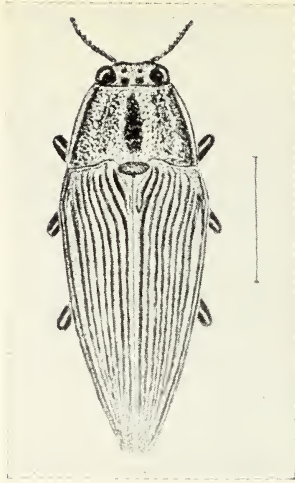


FIG. 8.

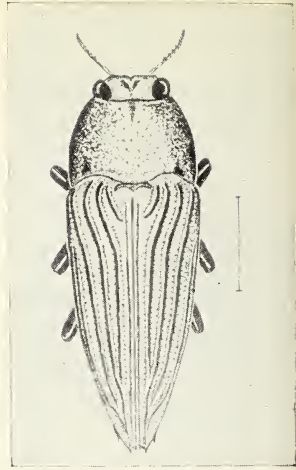


FIG. 9.

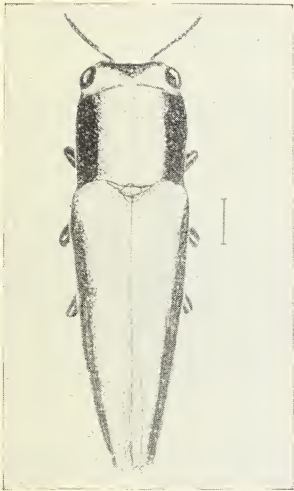


FIG. 10.

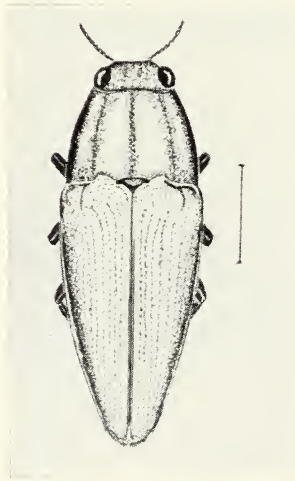


FIG. 11.

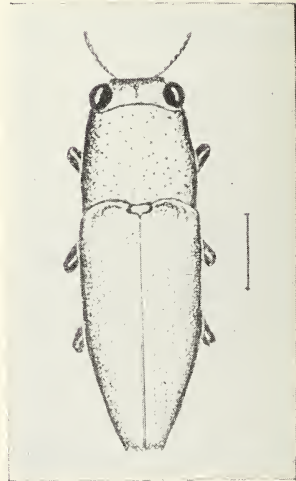


FIG. 12.

PLATE 12.

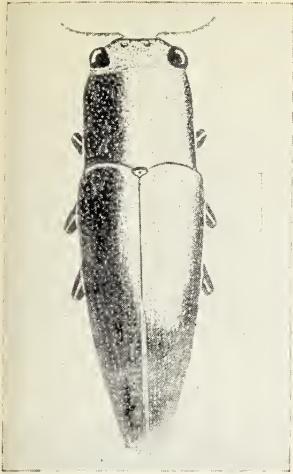


FIG. 13.

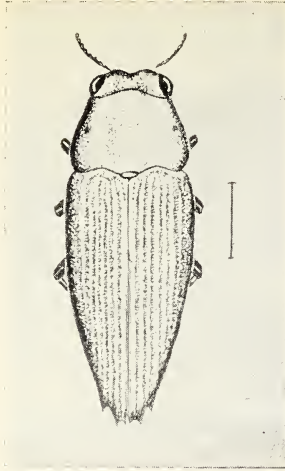


FIG. 14.

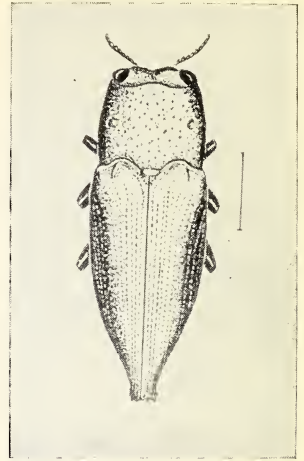


FIG. 15.

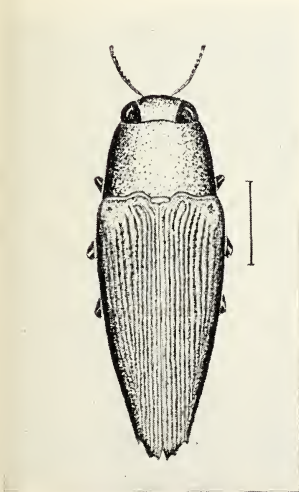


FIG. 16.

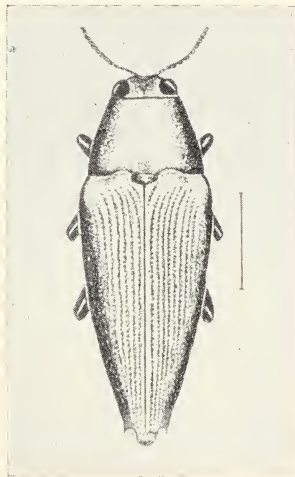


FIG. 17.

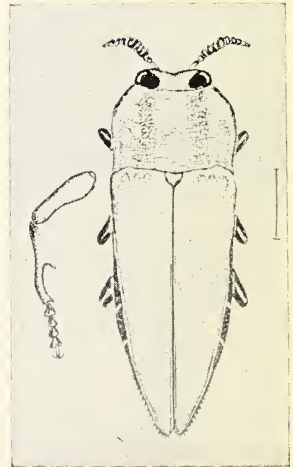


FIG. 18.

PLATE 13.

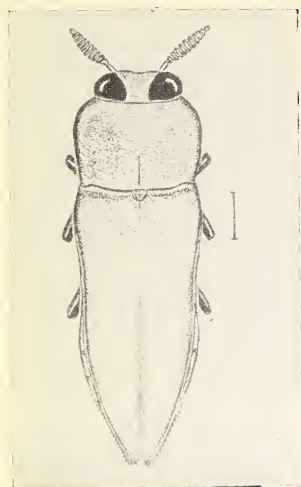


FIG. 19.

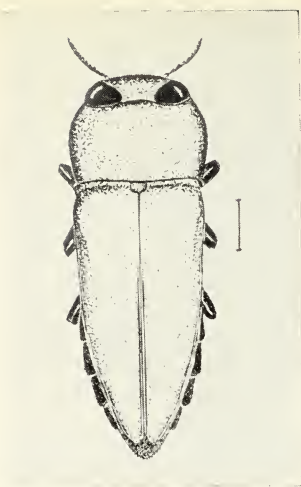


FIG. 20.

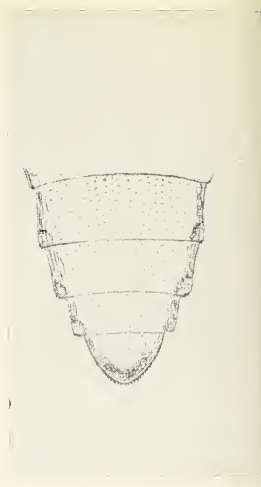


FIG. 20-A.



FIG. 21.

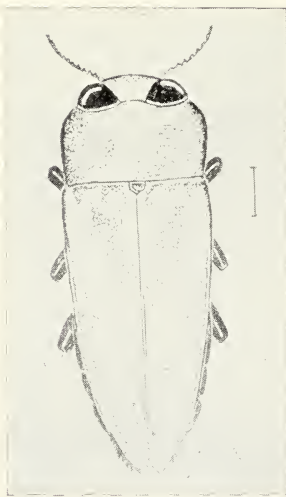


FIG. 22.

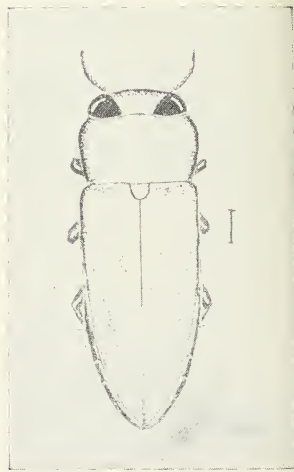


FIG. 23.

PLATE 14.

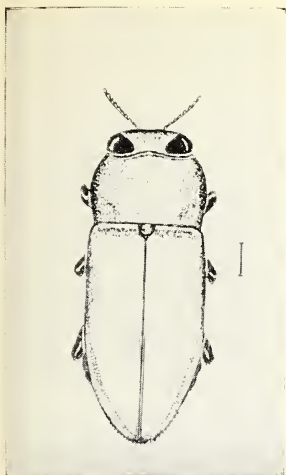


FIG. 24.

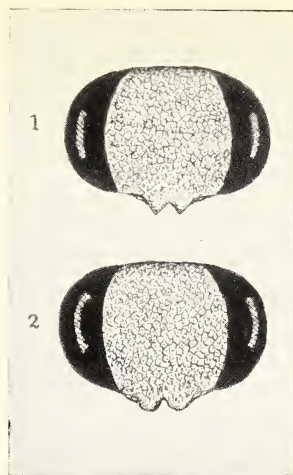


FIG. 24-A.

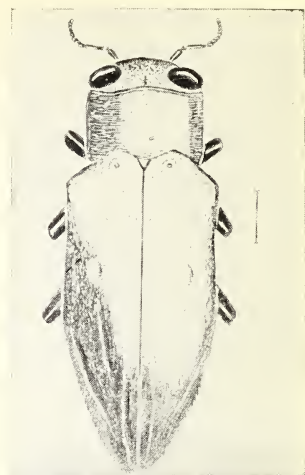


FIG. 25.



FIG. 26.

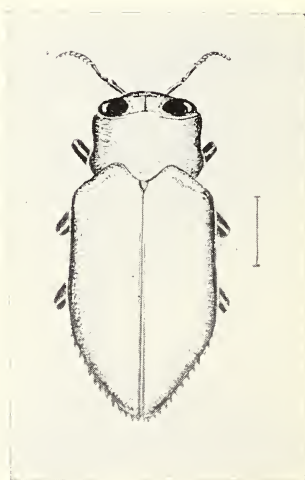


FIG. 27.



FIG. 28.

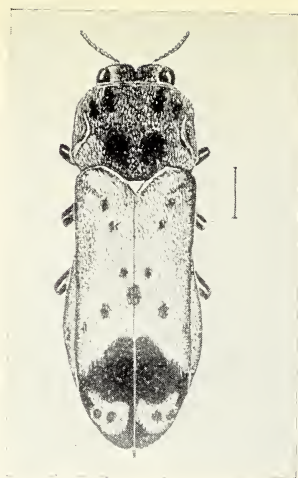


FIG. 29.

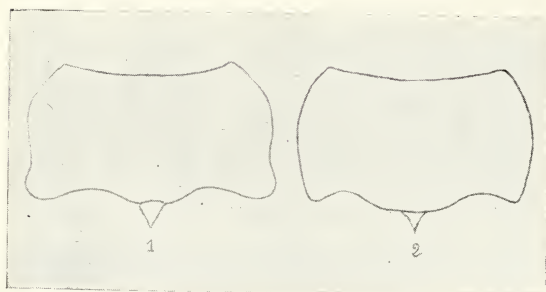


FIG. 28-A.



FIG. 30.

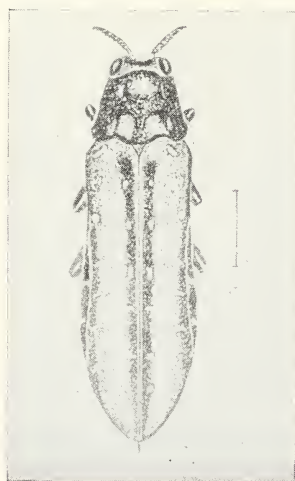


FIG. 31.



FIG. 32.

PLATE 16



FIG. 33.



FIG. 34.



FIG. 35.



FIG. 36.



FIG. 37.



FIG. 38.

PLATE 17.

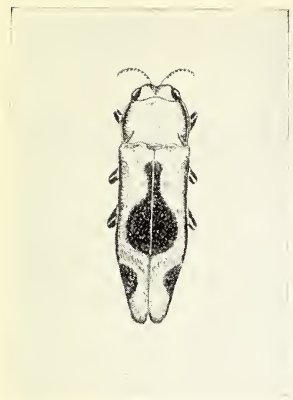


FIG. 39.

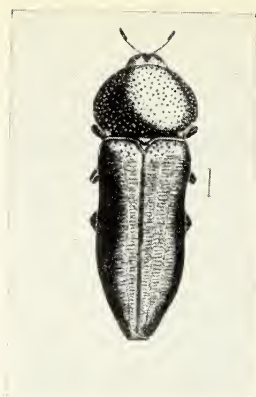


FIG. 40.

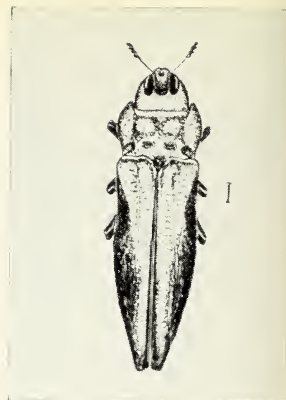


FIG. 41.



FIG. 42.

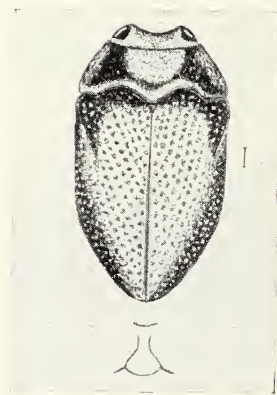


FIG. 43.

PLATE 18.



FIG. 44.



FIG. 45.

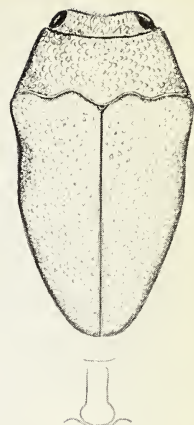


FIG. 46.

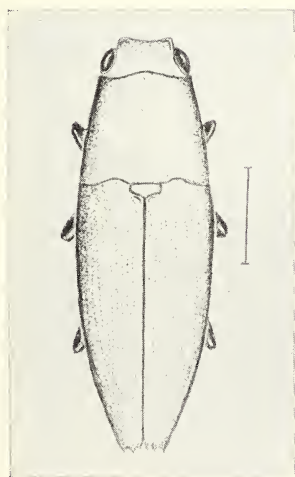


FIG. 47.

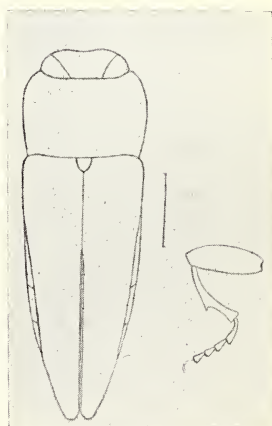


FIG. 48.

- 28a. Pronotum of *A. gabonica gabonica* and *gabonica johnstoni*.
29. *DISCODEROPSIS MACARTHURI*, Sp. nov.
30. *XENITA KENIENSIS*, Sp. nov.
31. *CHALCOPHLOCTEIS DIVES MACARTHURI*, Subsp. nov.
32. *CORCEBUS TRICOLOR*, Sp. nov.
33. *MELIBAEUS VIOLACEIPENNIS*, Sp. nov.
34. *KAMOSIA TURNERI*, Sp. nov.
35. *PSEUDAGRILUS HUNTI*, Sp. nov.
36. *AGRILUS SOMERENI*, Sp. nov.
37. ,, *VINCENTAE*, Sp. nov.
38. ,, *JINJAENSIS*, Sp. nov.
39. ,, *GEDYEI*, Sp. nov.
40. *APHANISTICUS GEDYEI*, Sp. nov.
41. ,, *DIMORPHUS*, Sp. nov.
42. *GALBELLA TURNERI*, Sp. nov.
43. *TRACHYS DENTI*, Sp. nov.
44. ,, *GEDYEI*, Sp. nov.
45. ,, *NAIROBIENSIS*, Sp. nov.
46. ,, *NGONGENSIS*, Sp. nov.
47. *SPHENOPTERA BUXTONI*, Sp. nov.
42. *ANTHAXIA NYASSICA KNIGHTI*, Subsp. nov.

It is regretted that the scale indicating the life size of the beetle in Fig. 32 is incorrect.

A CONTRIBUTION TO THE BREEDING BIOLOGY OF THE PALM-SWIFT, *CYPSELUS PARVUS*.

BY R. E. MOREAU, C.M.Z.S., M.B.O.U.

These small grey swifts occur throughout Tropical Africa wherever there are palm-trees, and the outlines of their nesting habits have been known for more than eighty years. The first observations, made on *C.p. parvus* in the Sudan by von Heuglin and by Brehm independently (cit. Reichenow, 1900), are good. The chief additional notes have been those of Lynes (1925) on the same sub-species; of Chapin (1939) on *C.p. brachypterus* (Rchw.); and of Loveridge (Coward, 1917) and Moreau (Sclater and Moreau, 1933) on *C.p. myochrous* (Rchw.) in East Africa. Most of the available information relates to the nest-site, shape and materials, in which there appears, as will be shown below, to be local, and perhaps sub-specific, variation.

At Amani there have lately been favourable opportunities for close observation of breeding behaviour. As for previous studies of this nature, closely supervised African observers were used to make long series of records of birds' activities at nests containing eggs and young. The expenses were for the most part defrayed from a Royal Society grant. At one nest continuous dawn-to-dusk records were obtained for fourteen consecutive days. Nearly six hundred more hours of observations in continuous spells of six hours and upwards have been made at fifteen other nests. Special attention was paid to the extent to which the eggs were brooded and to the frequency with which food was brought to the young in the latter half of the fledging period. The observers worked at ranges of five to fifteen yards, for the palm-swifts took no notice of them, though some were liable to fly off when something passed just under their nest. The birds are fully active throughout the daylight hours though most obvious, because tending to fly lowest, about sunset.

At Amani, with its evergreen environment (Moreau, 1936), it appears probable that breeding does not cease entirely at any time in the year, but there seems to be a minimum of activity in the coolest period, late June to August, and what may be called the full nesting season lasts from late September to at least February.

THE SITE AND CONSTRUCTION OF THE NEST.

It appears that throughout its extensive range this species builds almost exclusively on palm fronds. Those which are pinnate, like coconut- and oil-palms, can give only poor overhead cover; borassus and dom-palms (*Hyphaene*) can, however, give a solid roof. The only recorded exceptions to the use of palms appear to be the occasional nests in hut-thatch in the Congo (Chapin) and those in a tree *Dracaena*, *D. papahu* Agavaceae (formerly known as *Pleomele papahu*, Liliaceae), which has a simple leaf like an aspidistra up to three feet long and five inches wide (Sclater and Moreau). (The reference by Loveridge, quoted by Coward, to nesting in "banana-palms" is a slip of the pen for "coconut-palms."—Loveridge, M.S.). The birds build on both green and withered leaves; with the *Dracaena* this unselectiveness is certainly a source of avoidable mortality, for the withered leaves do not pack down against the stem as in many palms, and are readily torn off by the wind.

Although they are so sociable in the air palm-swifts are not, I think, necessarily colonial in nesting. At Amani there is every grade of density from a single nest on a palm to several dozens. One *Livistonia* palm (an introduced species with a fan-frond like a borassus, very favourable for a nesting-site) had a mass of dead fronds some seven feet in diameter enclosing the trunk firmly about thirty feet above the ground. In fact they were so closely packed by their own weight that a strong breeze did not move them in the least and they formed a sort of cone traversed by a great number of vertical culs-de-sac opening downwards. Scores of palm-swifts were about this tree at all hours of the day, the ground below was speckled with their dung and a patch of grass withered by it. A man sent up to cut the dead fronds had of necessity to attack the innermost first. In these there were no "live" nor recently used nests, though there were many remnants. As soon, however, as he began to get away from the trunk many newish nests appeared, and when half-a-dozen containing eggs or young had been produced work was stopped to allow the nesting to finish. In the sixty fronds cut there were about fifteen nests judged to be of the season; in the whole tree there were probably nearly one hundred.

The disturbance of this big nesting-site, where individual pairs could not be watched, led to birds establishing themselves on four small *Livistonia* palms where their nests were all between six and fifteen feet of the ground and hence most favourably placed for observation. On these palms between the beginning of September and early December 1, 2, 7, and 29 nests respectively were built, nearly all of which were used.

They were put on the upper side (not on the mid-ribs) of fronds so bent that their surface was vertical; and on outside fronds the incubating birds, perched with body vertical, were often exposed to direct sun and weather. If nests were built on the underside they would be efficiently roofed.

There is so far no evidence that a nest is ever occupied more than once. A factor may be the swarming mites that infest the nests soon after incubation has begun. In other respects a used nest is quite clean.

At Amani the main nesting material is feathers, stuck to the leaf and to each other at all angles, but there is usually some admixture of vegetable floss, which may form nearly half the total. Through the kindness of Mr. P. J. Greenway it has been possible to identify four kinds of floss, namely, *Funtumia elastica*, *Bombax rhodognaphalon* (which is reddish brown), kapok (*Ceiba pentandra*, which is grown locally) and seed-heads of a *Vernonia* sp. (Compositae). The feathers used are nearly all between 10 and 30 mm. long (say $\frac{1}{2}$ to $1\frac{1}{4}$ inches), predominantly grey and very soft.

In a series of nests recently examined it appears that downy-based breast-feathers of doves are favourite material; *Tympanistria*, *Streptopelia semitorquata*, and *Turtur kilimensis* are probably all represented and a number of Green Pigeon feathers (*Vinago wakefieldii* is the local species) are certainly identifiable in every nest. At least one strongly yellow feather appears in practically all nests and we have been able to match individual specimens with the breast plumage of a local bunting (*Emberiza cabanisi orientalis*), oriole (*O. chlorocephalus*), and weaver (*Symplectes kersteni*). A few white feathers seem to be fowls'. Out of eight nests examined carefully two contained a few glossy black feathers, apparently from a drongo (*Dicrurus adsimilis*) and a starling (*Lamprocolius corruscus*). Feathers of other colours were very uncommon: two minute chestnut feathers cannot be matched; three barred ones proved to be from the wings-coverts, rump and flank of a coucal (*Centropus superciliosus*).

It is noteworthy that Amani palm-swifts' nests built at all seasons of the year contain much the same high proportion of feathers, although a much larger proportion of the total local bird-population is in moult December-June than in the other six months of the year. It would be very difficult to establish whether there is any seasonal variation in the specific composition of the feathers used. In fact at Amani it is unlikely that all that large proportion of the avifauna which is confined to the lower strata of the evergreen forests can contribute to the palm-swifts' nests at any season because their dropped feathers

cannot get carried into the upper air, where the swifts do their collecting. Reviewing the list of species given above in the light of this limitation I think it likely that the Amani palm-swifts select for size and texture but not for colour. Chapin has, however, noted that the feathers used by *C.p. brachypterus* are "most often those of *Vinago calva*" and Bates thought feathers must be definitely selected by the palm-swift in the Cameroons because "in several nests examined at different times the feathers were always those of the Green Pigeon although other feathers could easily have been found".

West African *C.p. brachypterus* nests and Tanganyika nests of *C.p. myochrous* seem to have less vegetable down in their make-up than nests of *C.p. parvus* and *C.p. gracilis*; for Lynes describes Sudan nests as "made of vegetable down", and both Heuglin and Brehm indicate that cotton fibres formed the bulk of the nests they examined there; while Rand mentions only plant down in Madagascar nests. (Jackson's description of Kenya nests of *C.p. myochrous* as formed of "agglutinated saliva" with a "fine fibre or cobweb lining" must surely be uncritical. Nests often glisten as if dabbed with isinglass but in none I have ever seen is the saliva more than an adhesive.) Occasionally during incubation, and even when young are in the nest, a parent coming to brood adds a feather. Often no effort seems to be necessary to make it stick; the bird places it on the vertical pad and there it remains. But at other times the bird makes regurgitating movements and saliva can actually be seen coming from the bill.

At Amani a pad of material is stuck flat on the supporting leaf and at its lower edge a loop is built that is a mere curved flange with a comparatively firm edge well bound with saliva. The shape of the pad varies; four nests in use measured recently were $4\frac{1}{2}$ cm. high x 5 cm. wide, $7 \times 5\frac{1}{2}$ cm., 9×5 cm. and $12 \times 4\frac{1}{2}$ cm. One reason for such variation is that some birds add to the nest-pad (though not to the flange) in a desultory fashion during the incubation-period. In all four nests the internal width of the flange was about 15 mm., some 4 mm. less than the long axis of egg, which, without being stuck to the nest, could never remain "in" it for a moment. Actually the eggs are arranged to stand on their narrow ends, which are stuck to the nest-flange and often the side of the egg is also stuck to the back of the nest. The texture of the nest is so loose and fluffy, at any rate on the surface, that the egg is not held at all rigidly. For example, the egg in Plate 19 has tilted sideways. Nests of *C.p. brachypterus*, "tiny hammock-shaped structures 9 cm. x 5.5" (Chapin), seem to be similar to those of Amani *C.p. myochrous*, but those of *C.p. parvus* are apparently different. Heuglin gives

this impression when he says that in the Sudan the "nest hollow is not very deep and not a well-rounded bowl form": Lynes leaves no doubt of it, for he remarks that the nests are "in profile fish-hook-shaped . . . most, if not all, the eggs are stuck by their bottoms to the nest, but I should have thought . . . this . . . little more necessary to prevent them getting rolled out in a breeze . . . than in many orioles, doves and reed-warblers". The nests of *C.p. gracilis* of Madagascar must also be comparatively ample, for Rand describes five nests as "shallow saucers" 30 x 18 mm. deep internally. In this connection it is very noteworthy that the usual clutch of palm-swifts is two everywhere on the continent, but three in Madagascar.

NEST HISTORIES AND NESTING SUCCESS.

Using the method of assessing fledging and incubation periods advocated by Moreau (1940) the following data have been obtained:—

- (a) Incubation periods: 19 days 4 hours \pm 1 day; 19 days \pm 1 day; 19 days 14 hours \pm 16 hours; 20 days \pm 1 day (twice); 20 days 3 hours \pm 23 hours; 20 days 17 hours \pm 8 hours; 21 days \pm 1 day (twice); 22 days 13 hours \pm 12 hours. From these data the average incubation period can safely be taken as twenty days. The time taken for the last-cited clutch was clearly abnormal and one of the two chicks died after chipping the shell.
- (b) Fledging periods:—
Solitary young birds: 29 days 10 hours \pm 12 hours, 29 days 3 hours \pm 20 hours; at least 31 days; 31 days 8 hours \pm 12 hours; 33 days 11 hours \pm 8 hours.
Broods of two: 32 days 16 hours \pm 11 hours; 32 days 20 hours \pm 2 days. In this last nest the second young bird made its first flight fully two days after the other.

It is of great interest to compare these results with the incubation and fledging periods of the bigger swift, *Micropus caffer struebellii*, also at Amani (Moreau, 1940). Its average incubation period, twenty-one days (based on fourteen records), is only 5% longer than the palm-swift's, while its average fledging period, forty-two days (based on fifteen records), is fully 30% longer. The fledging periods of the only other swifts for which data appears to be on record, *M. apus apus* and *M. melba*, also approximate to forty-two days. The much shorter period of the palm-swift may be adaptive; it is unquestionably of advantage to young birds whose survival depends on their ability to support themselves day after day by grip.



PLATE 19.

Much more extensive fledging period data would have been obtained from the Amani palm-swifts but for the high mortality in the nest. The fate of sixteen clutches of two and of three single eggs is definitely known. Of these thirty-five eggs only twenty-three hatched, for two pairs were smashed and sucked, another pair fell out of the nest, two (in different nests) were addled, one pair and one single egg were deserted and another was lost through the fall of the whole palm front. The mortality in the young was even heavier: out of the twenty-three chicks that hatched thirteen disappeared from the nest at ages ranging from three hours to twenty-two days; one died at three days old; one died because the leaf shut up so that its parents could not visit it; two were deserted apparently without cause at the age of about six days.

Thus thirty-five eggs of which twenty-three hatched produced only six fledged young. Such a high mortality in the nest may not be abnormal. The loss of the four smashed eggs and the thirteen young that disappeared was almost certainly due to Fiscal Shrikes (*Lanius collaris humeralis*), which on two occasions were actually seen at work.* In East Africa this predator is practically confined to country above 3,000 feet, while the main stronghold of the palm-swift is below that altitude, especially along the coast and in northern Uganda. But there it is likely that the crows, which are absent from Amani, may do great destruction, as Winterbottom observed in West Africa.

PRE-INCUBATION BEHAVIOUR.

Nest building is leisurely; feathers are brought at long intervals, apparently by both members of the pair. In each of two nests the beginnings of which were observed the first egg was laid ten days later. From the earliest stages each pair of birds slept at its nest-pad.

*Their responsibility has since been virtually proved. From the beginning of November all Fiscals seen anywhere near the nest trees have been shot (six up to 15th December). Of eight young palm-swifts in the nest on 1st November three disappeared by 9th, the other five have flown; of ten hatched 1st to 15th November, seven have flown, one disappeared, two were deserted; of six hatched 16th to 30th November all still survived on 15th December. A striking contrast to the mortality before the Fiscals were controlled. These observations accord far better with the reputation given by Roberts (*The Birds of South Africa*, 1940), to the species there than with the view taken by Jackson and Sclater (1938) of the Kenya bird.

Male and female may often be seen together at a partially built nest and frequently they are in the closest possible contact. At nest 19, for example, three days before the first egg was laid the birds visited the nest together repeatedly, usually for only about five minutes but twice for over an hour. As a rule one of the birds would on arrival take up the vertical brooding-position on the pad, and shortly its mate would change places with it. Most of the time they were touching each other, the outside bird with a wing thrown over the "sitting" bird, an attention that was offered by whichever member of the pair was not "sitting." Alternatively the mate would perch vertically above the nest, covering the "sitter's" head with its body. Frequently also the "sitter" had its mate clinging to its back, but without copulation.

There is no evidence that these swifts copulate in the air, but they do so repeatedly on the nest before egg-laying is complete. The male has been seen to perch just above the "sitter" and lower himself over her body until he completely covered it. At a very early stage of one nest copulation, lasting about twenty seconds, was seen to take place three times in a visit of twenty-one minutes. At another nest copulation took place two hours before the second (and last egg) was laid.

Where the clutch is two eggs, as it is nine times out of ten at Amani (and never three eggs), the intervals between the egg-layings have always been about forty-eight hours, and all those eggs of which the time of deposition is known were laid before three hours after sunrise. It is common for an egg to be laid during the roosting period and for a time it seemed that we should not succeed in observing how the egg was attached to the nest-pad. Eventually Charles Abdallah, using binoculars at a range of about ten yards, was able to make notes of which the following is a translation:—

09.10. A bird settled on the nest [in the usual vertical position]. 09.14. It bent its neck to one side and its tail strongly inwards. Then keeping its body very firmly pressed against the nest it moved downwards till I could see the egg against its upper breast. Then it made vomiting motions, put its head down and I could see it putting saliva on the nest alongside the egg. It moved up again [until it was in the usual brooding position], then it worked its body from side to side, still pressing firmly.

This would have the effect of sticking the egg on to the moistened patch; and not content with one application the bird on this occasion repeated the whole performance, spreading more saliva and a second time working the egg into it. Al-

though, as already noted, the surface of the nest pad is loose enough to allow the egg some play it cannot be "turned", a departure from the normal procedure in birds generally that has been verified by observations on marked eggs at Amani.

THE INCUBATION PERIOD.

(a) *Result of One Week's Dawn-to-Dusk Observations at Nest 1.*

When the nest was uncovered a bird coming to incubate usually settled a few inches away, making an audible tap on the extended palm-leaf, and then sidled onto the eggs. The incubating posture, with feet gripping the back of the nest, was a strained one, the body vertical and rigid, head stiffly upwards at an unnatural angle, back and rump slightly convex and the wings held a little open as in Fig 1. The abdomen was pressed on the eggs, firmly enough in fact for the young to hatch safely, an operation that without this safeguard must in such a nest have been impossible. What actually happened was that on 21st February a bird settled on the two eggs at 09.10 and when it flew off at 10.22 one young bird was clinging (also in a vertical position) to the nest pad. Shortly afterwards nothing was visible of the empty egg-shell, although the old birds were not seen to carry it away. (This would in fact have been difficult, because they would have had to unstick it from the nest material.) The next morning the second young bird was hatched between 08.14 and 09.55. This time the bird was, as the observer noted, pressing itself tightly against the nest pad and moving its body restlessly; it was evidently breaking up the egg-shell, for tiny scraps could be seen falling to the ground. Certainly the egg-shells did not remain intact at all after the young were hatched and they could not have served as refuges for the young to "lower themselves into" as Loveridge observed (Coward).*

Both the parent birds incubated by day (cf. Loveridge's statement), frequently changing over, and apparently either may incubate at night (Chapin). Certainly on six of the seven days under observation both birds slept at the nest, one incubating and the other also on the nest-pad or very close alongside. They rarely came to roost together, but, as with their departure in the morning, one was usually a few minutes (up to 9) after the other. Their period of wakefulness lasted about 12½ hours, from approximately 06.00 to 18.30 local time.

During the day the parent birds were often to be seen together at the nest (as noted by Winterbottom (Bannerman) for

* At other Amani nests the egg-shells have always disappeared within a short time of the young being hatched.

C.p. brachypterus), as a rule in connection with a change-over on the eggs, which was however usually quite leisurely. The new arrival (A) might settle on the nest-pad alongside the incubating bird (B) and nudge it. (B) might then move to one side, (A) settle on the eggs and after a minute or two (B) fly away. At other times the new arrival would settle on a level with its mate's head and, after the eggs had been left uncovered, lower itself onto them. Both birds seemed eager to sit. Thus on 17th February one (A) began to sit at 08.40. At 09.18 (B) hung up alongside and remained there until two minutes after (A) had vacated the nest, which was not till 09.41. Meanwhile (A) sat close by and did not depart till 09.45. Again, the next day a bird (A) began to sit at 06.47; its mate (B) arrived at 06.50, settled alongside, nudged it without rousing it off the eggs and flew away at 06.55, leaving (A) still on. At 07.00 (B) returned and hung up by the sitter until 08.29, when it was allowed to take over.

During the last seven days of incubation, when the daily maximum temperatures were 26.2, 26.8, 29.0, 28.2, 28.8, 29.2 and 28.0°C. (between 79 and 84°F.), the eggs were covered for an average of 70% of the hours of day-light, the daily figures being 81, 73, 71, 78, 70, 63, 60%. This downward trend as hatching approached is not what would have been expected, but it has been recorded in another species sitting for only about 54% of daylight, *Hirundo smithii* (Moreau, 1939) that there is no increase in assiduity as hatching approaches.

The duration of individual spells on eggs showed a remarkably wide diversity, which could hardly have been affected by the weather, for this was uniformly rainless and sunny during the week under observation. Of the 65 complete recorded spells (not terminated by human disturbance) about half (32) lasted less than 20 minutes, with the favourite duration about 10 minutes; 10 more spells (16%) lasted from 20 to 40 minutes; and 20 (about 30%) for an hour or more, the longest being 102, 103, 104, 105, 138 and 213 minutes.

On nearly half the occasions when the sitting bird left the eggs they were covered again by the mate after practically no interval. There remain 37 intervals when the eggs were uncovered for more than one minute. Half of these lasted less than 15 minutes and most of the rest 20-40 minutes. Yet four days each had one long interval, of 105, 123, 154 and 220 minutes, when for no apparent reason the parents were not seen near the nest at all.

(b) Observations at Other Nests.

As a rule brooding does not begin directly the last egg has been laid, nor for some hours afterwards, though frequent visits

THE INCUBATING PALM-SWIFT.



of less than five minutes may be paid on that day. Incubating birds always adopt the rigid-looking posture described under nest 1 but are often in movement, wriggling and preening. Their large eyes, which might seem adapted to crepuscular habits, are open, even in the strongest light. One bird brooding on a nest, the "back" of which was particularly ample, picked feathers from the top and added them to the lower part of the pad.

The percentages of time the eggs are incubated are subject to almost the greatest variation possible as the following records for 6-hour spells on successive days indicate:—

Nest 4:	54, 46, 80, 4, 82%
„ 5:	78, 88, 56, 7, 98%
„ 9:	70, 68, 60, 55, 100%
„ 18:	69, 87, 98, 91, 84, 89%
„ 23:	26, 60, 69, 96, 100%
„ 26:	49, 42, 70, 50, 60%
„ 27:	33, 60, 38, 76, 98, 34%

The very high percentages were achieved by close collaboration of the parents, the sitting bird not leaving until it was pushed off by its mate. The very low percentages are quite inexplicable. They were not due to disturbance by human agency. It seems surprising that embryos could survive the occasional extremes of neglect in Nests 4, 5 and 23, when in the first half of a day the eggs were incubated altogether for less than half an hour, for half an hour and for 1½ hours respectively. Actually both eggs hatched in Nests 4 and 5, and one in Nest 23, the other being addled.

The variation in percentage of time brooded is made the more inexplicable by its lack of relation to temperature (as measured in the screen). For example on the days when 38, 76 and 98% were recorded at nest 27 the minima were 16.3 14.5 and 17.8°C. and the maxima 20.4, 24.0 and 24.3°C. The day when nests 4 and 5 had such unreasonably low brooding records was comparatively warm though misty and wet (min. 17.0°C., max. 25.2°C., mean 21.1), but the preceding three days, when the birds brooded altogether more consistently, had mean temperatures very little different—21.2, 21.0, 20.3°C.

Brooding assiduity also has no relation to rainfall. As it happens, most of the observation periods cited above were of continuous sunny weather, but enough observations have been made on wet days to establish that palm-swifts do not, like some other birds, for example, the rock-martin (*Ptyonoprogne*), regularly cover their eggs when rain falls.

In duration of individual spells on eggs the birds at all the seven nests quoted above differed from those at nest 1 in having a much smaller proportion of spells under 20 minutes, altogether only 26% instead of nearly 50%. Spells of 20-40 minutes accounted for another 26%, 50-60 for 19%, the remaining 29% being long spells of over an hour. Five spells lasted over two hours, and two of these were over three hours.

In most pairs watched the eagerness to sit is striking. As in nest 1 the bird alongside the nest-pad often jostles the sitter and the latter is often reluctant to give place. A change-over without uncovering the eggs is a feature of behaviour at all nests, though only at nests 9 and 18 was the percentage of such change-overs so high as in nest 1. It is most difficult to reconcile such evidence of eagerness to sit with the very long periods when the eggs are left uncovered; for at every nest, even those showing the highest brooding assiduity, a lapse of $1\frac{1}{2}$ hours or more occurs on the average once every other day. Intervals of over three hours are not rare and over five hours has actually been recorded twice. Such long periods of neglect are liable to occur at all times; as many of them begin in the chilly morning hours soon after sunrise as later in the day, especially because it is the rule for both parents to fly off soon after sunrise and more or less together. An instance, at nest 18, where one went off at 05.58 and the other not till 06.55 is very unusual. At night also they come to roost practically together.

The foregoing data of periods "on" and "off" relate only to occasions when the bird was not for any reason scared off its eggs. Some data have been accumulated incidentally on behaviour in such circumstances. It might be supposed that a bird scared off, especially when it had been brooding for only a short time, might quickly attempt to return or the collaboration between the members of the pair might be such that its mate would. On the contrary there is no evidence that such a thing happens; when a bird is scared off there are the same chances that the eggs will be uncovered for 20 minutes or for 100 or for only 5 as there are when the bird goes off normally.

DEVELOPMENT OF THE YOUNG.

At hatching the young are entirely naked and dusky reddish brown in colour, which darkens slowly to sooty on the upper parts, while the under-parts remain reddish longer. It is remarkable however that in one nest the first hatched was redder from the start than the other and a difference was still perceptible at the age of seven and eight days (when they were deserted).

There is no doubt that the newly-hatched birds are not stuck to the nest-pad by the parent as the eggs are. The young

have to cling on, whenever they are not actually being brooded, for the thirty days until they fly; and since on the day of their birth they may be left alone for a couple of hours, considerable muscular effort is demanded of them from the start. In their hanging on they are favoured by being hatched with claws that are unusually well developed, sharp, curved, and fully as long as the toes, and by the texture of the nest, which gives the best possible holding surface. In fact a young palm-swift about three days old that died of neglect remained dangling by one foot for thirty-six hours.

From within a few hours of birth the muscular activity of young swifts is remarkable. Some are constantly in motion, rubbing their necks and sightless heads together, jerking their rumps and wagging their wing-stumps. Often they fling their heads sideways or backwards, even right onto their shoulders. These movements have nothing to do with the arrival of food and may be caused in part by the irritation from the nest parasites. However, one pair when only two and three days old respectively were not quiescent even when being brooded; they occasionally poked a head out from under the parental wing and actually changed places on the nest-pad. At four days old this pair were already to some extent independent of the support of the flange, for one would move up the vertical pad until his body was on a level with the other's head. Older fledglings may be seen crawling up their leaf right off the nest. One got as far as another nest a couple of feet away, where it went into a huddle with the two fledglings belonging there. The reactions of their parents were not seen, but later the wanderer got back to its own nest.

At three days old the palm-swifts are still blind and perfectly naked. Their bill and gape, which is not much enlarged along its edge, are horn pink, with a paler raised spot round each nostril. A minute white egg-tooth is sometimes still present. They are now capable of uttering a very tiny piping noise, inaudible at a distance of much more than one yard. They spend most of their time, as they have from birth, in a vertical position, jammed together flank to flank, and with their heads stretched up flat against the back of the nest, in fact, in the same posture as the brooding adult's. This attitude leaves their anus projecting constantly over the edge of the nest-flange, so that they always, from birth, can drop their faeces to the ground and the parents, unlike most birds, never have any nest-cleaning to do. It is noteworthy that within two hours of hatching one young bird was seen to pass a minute pellet of faeces. In one pair it was observed that the size of the faecal pellets increased rather suddenly to about 4 min. in diameter on the 4th day.

At about five days old white points of quills begin to show on the upper parts. By the 6th day some young birds are just beginning to open their eyes. Whitish down now breaks out very rapidly all over the upper parts so that the young bird is soon a mass of it. Clinging in a vertical position to the nest it harmonizes pretty well with the nest material, loses all semblance of a bird and so long as it is still would pass for a clot of lichen on the palm frond. By the 15th day much of the whitish down has gone and feathers, of which mainly the brown tips are apparent, clothe the forehead, shoulders and sides of the belly. Some down is still left by the 20th day.

The growth of the remiges is interesting. The quills all start about level but the outer primaries soon grow much more quickly than the others. At 15 days old the longest primary is about 8 mm. longer than the shortest; but by 22 days the difference is nearly twice as great (in one wing measured, 43 mm. against 29). At about 28 days the disparity has increased to 64 mm. against 32.

Owing to the position of many of the young birds, in a constricted fold of a withered frond, they can exercise their wings hardly at all. One young bird under close observation was never seen to move its wings except when it was being fed: then it rattled them audibly against the dry frond. However, each of the five young birds whose actual first departure from the nest has been witnessed flew well, following a parent who had fed it and apparently without coaxing or compulsion. On our evidence it is unusual for a young swift to return to its nest except to roost; some families return with their parents for the first night or two, others do not.

PARENTAL CARE AFTER HATCHING.

(a) *Brooding.*

For about the first week after the hatching of the young the general behaviour of the parents is much what it was before. The young are brooded with the same curious admixture of assiduity and neglect as the eggs.

At nest 1 the day after the first egg hatched, a parent was "on" for two long spells, of 95 and 101 minutes, in the early morning, and during the latter (08.14—09.55) the second egg hatched. The same evening, when the second fledgling was only eight hours old and still of course perfectly naked, there was an astonishing period of 108 minutes, from 10.12 till 12.00, when no adult came near the nest. On the next day there were three periods of over an hour each—61, 117 and 143 minutes—when no parent appeared. The maximum air ("screen") temperature reached that day was 29°C. In subsequent days

the young were brooded 40, 30, 21, 42 and 52% of the hours of daylight. Thus the general level of brooding was rather lower than during incubation. The main reason was a shortening of individual spells (while visits remained as irregular as ever); and almost as soon as feeding began the parents began to make a proportion of their visits for that sole purpose, without brooding.

The young in nest 1 disappeared while brooding was still at a fairly high level. Observations at other nests make it clear that brooding ceases to be of significant extent by about the 9th day (when the young are partially covered with down): at nest 10 the young were brooded 67% of the time on the 7th day but only 13% on the 9th and not at all thereafter; at nest 18 the percentages were 69, 74 and 8 on the 5th, 7th and 9th days.

(b) *Feeding.*

Owing to their situation in the shadow of the leaf, it is at some nests difficult, even in broad daylight, to be sure whether a visiting parent actually feeds its young or not. However, on the strength of observations on especially well-placed nests I have concluded that each recorded visit may without risk of serious error be taken, for purposes of the following discussion, as meaning a feed for one young bird. Visits without giving food are uncommon and the giving of food to two young at a single visit rare.

As a rule the first meal of the day is brought some time between 10 and 60 minutes after the parents' first departure from their roost. A delay of $1\frac{1}{2}$ hours is very unusual. At this early hour, as later in the day, the parents may arrive more or less together, which proves that they share the duty of feeding, or the first feed of the day by a single parent may be followed by an interval of anything up to 90 minutes. There is certainly no rush to feed the young, which have been without food for about 12 hours, and the feeding frequency in the early morning is no greater than at any other time of the day. On the other hand it is a definite rule that feeding speeds up at the end of the day. Excluding the occasions when the two parents come to roost (always too much in the dusk to see whether they bring food then), they usually make about four visits in the last hour of daylight, which, as will be shown below, is much more frequent than during the rest of the day. For example, at nest 1 on days following the hatching the total visits numbered 17, 16, 16, 27, 24, of which four on each day were in the last hour before coming to roost. The corresponding figures at nest 12 for the last hour on the 6th, 5th, and 4th days before the young flew were 4, 4 and 5.

On most days at most nests, whether they contain one young or two, there is at least one period of $1\frac{1}{2}$ hours or more during which no parent brings food, but on the whole the attentions of the parents are not quite so irregular as when they have eggs. Excluding the last hour of daylight, when the intervals average only 15 minutes, about two-thirds of all the intervals between feeds do not exceed 45 minutes, and within that range the intervals are fairly evenly distributed.

Actually the general feeding rate is too slow for one hour to be a satisfactory unit and it is preferable to use the unit of 200 minutes that I have adopted in other specific studies. Calculated on continuous watching spells of six hours and upwards (but excluding the last hour of daylight) we have the following feeding rates (per 200 minutes) all in fine weather:—

For a solitary young one:—

- Nest 10: 3.0, 3.3, 3.8, 3.3; average 3.3.
- „ 13: 3.3, 4.1, 3.8, 4.4; average 3.9.
- „ 23: 4.7, 2.5, 3.3, 3.3, 3.3, 4.1, 4.7; average 4.3.
- „ 25: (later) 1.8, 4.0, 4.0; average 3.3.

For each of two young in nest:—

- Nest 9: 2.6, 2.5, 4.1, 4.2, 2.6; average 3.2.
- „ 18: 3.3, 2.6, 3.0, 2.3, 3.0, 2.9; average 2.8.
- „ 25 (at first). 1.8, 2.5, 1.5; average 1.9.

It is clear from these data that the solitary young palm-swift in a nest tends to get more food than when it is one of a pair, an observation paralleled in other species of birds (Moreau, 1939).

The rates compare with about 7.5 for each young Rough-wing Bank-martin (*Psalidoprocne holomelaena*) and about 40 for each young *Hirundo smithii* (Moreau, 1939), so that it seems probable that the mechanism of feeding by the swift may be different from at least that of *H. smithii*. With this latter bird it can practically always be seen that the conveyance of food is instantaneous, as if a single morsel were given each time. In the parent swift convulsive movements of the head can sometimes be seen, as if it were regurgitating food, after it has alighted and before it has fed its offspring—by thrusting its bill well inside theirs. Probably the feeding mechanism is the same as in the Common European Swift, *Apus (Micropus) a. apus*, regarding which there is a certain amount of evidence that they regurgitate packets of insects (Ingram, 1920; Kirkman, 1910; Jourdain, 1938).

SUMMARY AND REFERENCES.

The subspecies of *Cypselus parvus* show differences in nest-shape, nest-material and clutch size. At Amani nests of *C.p. myochrous* are mainly of feathers, with plant floss of several species, all stuck together with saliva. Among the feathers those from the breast of species of the pigeon family are prominent but a number of other birds have been identified as contributing. At Amani the eggs are always stuck to the nest directly they are laid (process described), a safety device entirely necessary because the nest is a vertical pad with a mere flange, narrower than the egg-length, at its lower edge.

Data are available from about 700 hours of observations on behaviour at several Amani nests. Copulation takes place on the nest-pad. The parents share incubation (in a vertical position), spend much time on the nest together and often change over on the eggs without uncovering them. Seventy-five per cent of individual spells "on" last over 20 minutes, nearly 30% of all spells over one hour. This assiduity alternates with astonishing periods of neglect, up to 3 hours (not rare) and even 5. One result is very great variation in the percentage of daytime for which eggs are brooded in successive days; and the percentage has no relation to weather or to temperature.

Incubation averages 20 days. The young are hatched while the abdomen of the brooding parent presses them against the nest-pad. Unlike the eggs they are not stuck on; they cling; and in this they are aided by being born with unusually long sharp claws and with great muscular power, though naked and blind. Possibly their relatively short fledging period of 31 days may be an adaptive feature. For while their incubation period is about the same as that of the bigger *Micropus* (*Apus*) species, which live in nests of normal shape, their fledging period is 30% shorter. The young *Cypselus*, whose development is described, often have no opportunity of exercising their wings yet fly well at their first launching.

The parents brood them for about the first eight days, but with long periods of neglect (up to 108 minutes) even on the day of hatching. The first feed of the day may not be brought till an hour or more after sunrise but feeding is accelerated in the last hour of daylight. For the rest of the 12-hour period of activity on the average only about one meal per hour is brought to each young bird when alone and less when there are two in a nest.

Of 35 eggs laid in 19 nests only 23 hatched and only six survived to fly. Over half the losses appear to have been due to a shrike, *Lanius collaris*.

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CORYNDON MEMORIAL MUSEUM EXPEDITION TO
THE CHYULU HILLS, 1938.

VIII.

GRASSHOPPERS (ORTHOPTERA, ACRIDIDAE).

By B. P. UVAROV, D.Sc., with field notes
by V. G. L. VAN SOMEREN, F.R.E.S., etc.

The collection of grasshoppers made in the Chyulu Hills proved to contain 36 species, five of them being indeterminable at present, and one new to science. The material at hand is insufficient for drawing bigeographical conclusions, except that the majority of the species found in the Chyulu Hills are known to occur mainly in the East African uplands, there being a clearly indicated affinity of the Chyulu fauna with that of Kilimanjaro, in particular.*

The new species of *THISOICETRUS* may be endemic to the Chyulu Hills, but further collecting in East Africa is necessary before this can be definitely stated.

A representative series of specimens has been retained for the British Museum (Natural History), and the remainder is deposited in the Coryndon Museum, Nairobi.

ACRIDA SULPHURIPENNIS (Gerstaecker, 1869).

June, 2,800 ft., 3 ♂♂; 3,000 ft., 1 ♂

(Fairly common in the grasslands of the lower altitudes; not recorded from the upper moorland.)

ACRIDELLA, sp.

April, 5,200 ft., 1 ♂; June, 2,800 ft., 1 ♀.

This is the species usually recorded from Tropical Africa under the name *A. nasuta* (Linné), which species it resembles very closely in general appearance and colouration. There are however, important structural differences between the Mediterranean specimens of the true *A. nasuta* and the tropical ones and the latter must be regarded as a distinct species.

* Sir Guy Marshall, when reporting on the Weevils, suggests that the Chyulu fauna is derived from the north-east Kenya highlands rather than from Kilimanjaro. We have since noted that the Orthoptera of the Emali range, to the north-west of the Chyulus, are very similar in character.

It is not improbable that this species has been described by one of the older authors, e.g. Thunberg, but this cannot be decided without re-examination of types. The present material is, of course, insufficient for describing the species as new.

(The transverse pigmented bars between the veins is a conspicuous feature when the insect is in flight.)

CANNULA, sp.

April, 5,200 ft., 1 larva. (No others were noted and the insect was scarce at the higher elevation; though plentiful on the Kibwezi plains they were not taken.)

MESOPSIS LATICORNIS (Krauss, 1877).

June, 2,400 ft., 1 ♂. (Taken in the long grass on the Noka Track Dam: not seen at higher altitudes.)

DURONIA TRICOLOR, Karny, 1907.

June, 2,800 ft., 9 ♂♂, 4 ♀♀. (Seen only at the lower altitudes at the south end of the range and along the Noka Track.)

LOBOPOMA AMBAGES, Karsch, 1896.

March, 5,600 ft., 1 ♀; April, 5,200-5,400, 1 ♂, 3 ♀♀; June, 5,600 ft., 2 ♀♀.

Originally described from Zanzibar and known from several other localities in East Africa.

(A total of 12 ♂♂ and 15 ♂♂ were taken at the north end of a range, in grasslands; not seen at the southern end.)

PARACOMACRIS STENOPTERUS (Schaum, 1853).

April, 5,200 ft. 6 ♀♀; May, 5,600 ft., 4 ♂♂, 6 ♀♀; June, 5,600 ft., 5 ♂♂, 2 ♀♀; July, 5,000 ft., 1 ♂, 1 ♀, 2 larvae.

(Altogether 18 ♂♂, 17 ♂♂ and 3 larvae were taken. Common at the northern half of the range in grass lands when numbers could be taken by sweeping.)

?*ANABLEPIA RUFESCENS* (Kirby, 1902).

April, 5,200 ft., 1 ♂; May, 5,600 ft., 3 ♂♂.

The type of *A. rufescens*, described from Baringo, is inaccessible for examination at the moment and the determination must, therefore remain doubtful.

(A rather obscure species occurring alongside *P. stenopterus* in the same type of surrounding and not easily differentiated in the field.)

JANSOMENIA DIMIDIATA, I., Bolivar, 1911.

June, 3,000 ft., 2 ♀♀. (We found this to be a low level species and have no record of it other than on the Noka Track at the south approach to the range.)

HETEROPTERNIS COULONIANA, Saussure, 1884.

April, 5,400 ft., 2 ♂♂, 1 ♀; May, 5,400-5,600 ft., 3 ♂♂, 3 ♀♀; June, 5,600 ft., 1 ♀, 1 larva; July, 5,600 ft., 1 larva.

(A total of 6 ♂♂ and the above-mentioned females were taken. They occurred on the lava flows where vegetation was sparse.)

GASTRIMARGUS AFRICANUS (Saussure, 1888).

April, 5,200 ft., 2 ♂♂, 1 ♀.

(Not common. Conspicuous in flight, but easily mistaken for the next species, on account of the hind-wing pattern and colour.)

GASTRIMARGUS BREVIPES (Sjostedt, 1928).

April, 5,200-5,400 ft., 2 ♂♂, 2 ♀♀; May, 5,500-5,600 ft., 2 ♂♂, 3 ♀♀.

(Because of their cryptic colouration they are difficult to see at rest; they are equally difficult to capture for they take flight readily. With this, as with many other species, we found it more sluggish in the early morning, and thus more easy to take.)

LAMARCKIANA, sp.

July, 3,500 ft., 1 ♂. (No examples of this genus were noted on the range proper, but both sexes occurred on the low foothills, more especially at the south end toward the Noka Track. This is a very difficult group and paired material is badly required.)

PARASPHENA NAIROBIENSIS, Sjostedt, 1933.

April, 5,200 ft., 2 ♂♂, 3 ♀♀; May, 5,600 ft., 1 ♂, 2 ♀♀.

The species has been described from a single male, previously preserved in alcohol and discoloured. The specimens before me have the following parts red: base of antennae, edges of fastigium, median carina of the head and pronotum, posterior and anterior margin of the pronotal disc, median line of the abdomen, and posterior tibiae. The lateral series of light spots on abdominal tergites is sometimes obsolete. General colouration blackish-olivaceous above, greenish-olivaceous below.

(It is to be noted that Chyulu examples do not agree with specimens taken from the environs of Nairobi, from whence

came the type. And if view of the fact that this type was an alcohol preserved specimen, subsequently staged, it is quite possible that the Chyulu insect represents a distinct species or race.)

PHYMATEUS VIRIDIPES, Stal, 1873.

May, 5,500 ft., 4 ♂♂, 4 ♀♀, 4 larvae. (This species was common. Adults, particularly females, were sometimes noted flying from one forest patch to another at a considerable height over the intervening grass land. Several clusters of larvae were noted. The sex ratio is worth noting in these associations, throughout the moults, so also the precedence of sex maturity, and the degree of "invasion" by males from another hatch.)

TAPHRONOTA CALLIPAREA (Schaum, 1853) var.

immaculata Sjöstedt, 1929.

April, 5,200 ft., 1 ♂; May, 5,500 ft., 1 ♂; June, 5,600 ft., 1 ♂.

This "variety" with the unspotted posterior femora is known from Kilimanjaro and its relation to the true *calliparea* remains to be studied. (No females were noted, but "bunches" of larvae in various stages were not infrequently met with. The males were taken as isolated specimens along the forest edge.)

TAPESIA GRISEA (Reiche et Fairmaire, 1847)?

April, 5,200 ft., 1 larva; May, 5,500 ft., 1 ♂; June, 3,000 ft., 1 ♂; July, 6,000 ft., 1 ♂.

Sjöstedt's revision of the genus (Ark. Zool. Bd. 15, No. 16, 1923) is based on such arbitrary and unreliable characters that its use is practically impossible. I am, therefore, unable to refer the specimens before me to any of the ten "forms" into which that author has subdivided the species.

(Found sparingly throughout all parts of the range. Altogether 10 examples were taken. They are longer winged than a series taken at Moshi and Kilimanjaro, and less distinctly spotted. A further series from Uganda, is short-winged, and more unicolourous than even the Moshi material.)

CATANTOPS KILIMANJARICUS, Ramme, 1929.

April, 5,200 ft., 5 ♂♂, 4 ♀♀; May, 5,400-5,500 ft., 1 ♂, 1 ♀; June, 5,600 ft., 3 ♂♂; July, 5,600 ft., 1 ♂, 2 ♀♀.

This species is so far known only from Kilimanjaro, at the altitudes ranging from 1,500-2,700 mtrs.

(Sixty-six examples in all were taken. It was very common in the grasslands of the higher elevation, and half a dozen or so could be taken at one sweep of the net. Its range across the

Laitokitok plains to Chyulu and again to the Emali hills is of interest, for we have no record of it on the plains themselves.)

?*CATANTOPS MOMBOENSIS*, Sjostedt, 1931.

April, 5,200 ft., 1 ♀.

This species has been described from a single male from Usambara, and I cannot be certain in my determination of the female before me.

CATANTOPS DECORATUS, Gerstaecker, 1869.

April, 3,800 ft., 1 ♂, 1 ♀; July, 3,000 ft., 1 ♂.

(This species might easily be mistaken for *C. kilimanjaricus* in the field. It was however scarce on the higher altitudes, a few examples being taken at 5,600 ft. We have noted it as common on the lower elevation. The yellow band on the hind tibiae is distinctive.)

CATANTOPS, sp.

April, 5,200 ft., 1 ♀.

This specimen belongs to the group of stout, hairy and rugose species (e.g. *tukuyensis* Miller.), but impossible to identify without a male.

(I have looked over the *Catantops* kept behind and find no male which I can associate with the above specimen. It must be a scarce species, for daily hunting failed to turn up another specimen.)

THISOICETRUS LATICERCUS, sp. nov. (Fig. 1, L.)

Belongs to the group of *T. pulchripes* Schaum, but is very distinct from that species in the structure of the male cerci.

♂ Antennae much longer than head and pronotum together, distinctly incrassate beyond the basal third, the median joints being about half again as long as broad.

Face moderately oblique. Frontal ridge practically flat, weakly narrowed at the fastigium and slightly constricted under the ocellum; surface with punctures, which are more dense and less regularly arranged below the ocellum. Fastigium of vertex prominent, very weakly concave without the median carinula.

Pronotum obtusely tectiform above. Median carina low, but acute. The first two transverse sulci fine, scarcely cutting the median carina; third sulcus deeper, placed at about two-thirds of the length. Lateral carinae distinct, but irregular, weakly incurved in prozona and convex in metazona. Anterior margin rounded; posterior margin very broadly rounded-angulate.

Prosternal tubercle tongue-shaped, weakly narrowed to the apex which is rounded.

Elytra almost reaching the apex of abdomen, narrow.

Apex of abdomen somewhat swollen. Last tergite divided into two lateral parts by a broad median excision; each part bears a small projection on its inner angle. Supraanal plate oval, with attenuate apex; surface with a median furrow in

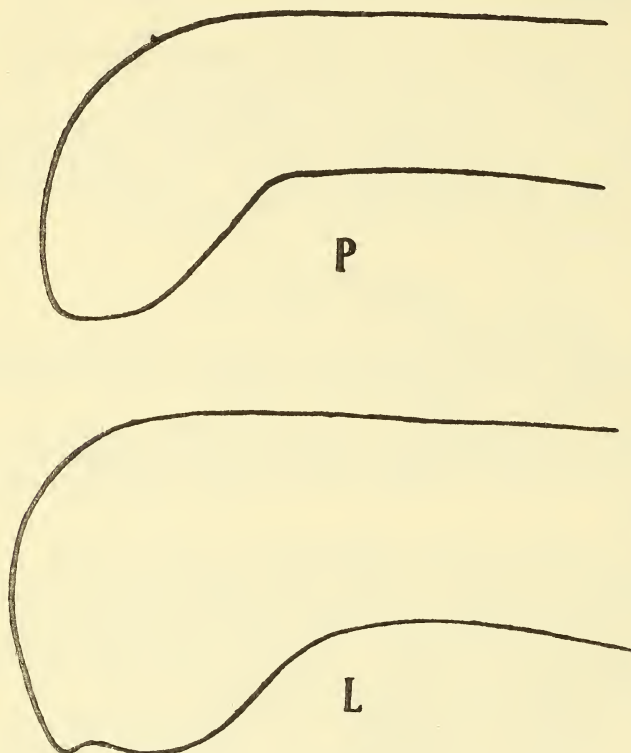


FIG. 1. P, male cercus of *Thisoicetrus pulchripes* (Schaum); L, ditto of *Thisoicetrus laticercus*, sp.n.

the basal half, and with an oblique, raised fold beyond the middle of the lateral margin. Cercus large, generally rather broad, with the apical part strongly flattened, decurved and expanded; subapical margin with a shallow emargination. Subgenital plate short, globose, punctured.

General colouration blackish-olivaceous. Face with two broad, light sulphurous stripes; frontal ridge in the upper part yellowish. Head above with two indistinct brownish stripes. Pronotum above velvety-brown, with two sharply defined yellow stripes. Elytra uniformly infumate, with the anal area of lighter olivaceous-brown colour. Wings dark yellow, with brown veins. Front and middle legs olivaceous. Hind femur externally brown, with a median and a preapical yellow ring; internally yellow with two brown fasciae; below yellow, with a single postmedian brown fascia; knee blackish all round. Hind tibia mostly dirty blue; base black, followed by a yellow ring and a blackish one.

Length of body ♂ 22, ♀ 38; pronotum ♂ 5, ♀ 8; elytra ♂ 13, ♀ 22; hind femur ♂ 14, ♀ 24 mm.

Described from the following material from the Chyulu Hills: April, 5,200 ft., 1 ♂; May, 5,400-5,500 ft., 4 ♂♂; June, 5,600 ft., 1 ♂ (type), 3,000 ft., 1 ♀; July, 3,500 ft., 3 ♀♀. The type and some paratypes are in the British Museum; other paratypes in the Coryndon Museum, Nairobi.

At the first glance, this species may be taken for a very close relation of *T. pulchripes*, differing mainly in the abbreviated elytra, but a closer study reveals a striking difference in the structure of the male external genitalia, particularly the cerci, as can be seen from comparing the figures (fig. 1, P and 1, L). The cercus of the new species is not only broader generally and especially in the apical decurved portion, but the lower edge of the latter is somewhat emarginated. The shape of this emargination is a little variable and sometimes it is very shallow, but there is no doubt that it is a real structural feature and not one due to partial bending of the margin. In the shape of the cercus, the new species resembles *T. brevipennis* I. Bol.* described from Mt. Kenya and again, as *T. nairobiensis*, from Nairobi. Both descriptions are not very exact and the second one was based on a specimen previously preserved in fluid, which affected not only the colouration, but also caused a shrivelling of the cercus as can be clearly seen from the figure. I have before me a well preserved male from Mt. Kenya which agrees well with both descriptions and which I take to be *T. brevipennis*. It differs from *T. laticercus* in the colouration, particularly of the hind femur which is mostly red and without wide black pattern, as well as by the male cercus having no subapical emargination. It is not improbable that *T. laticercus*

* The following synonymy, although not based on examination of the types, appears correct: *Thisoicetrus brevipennis* I. Bolivar, 1914=*T. nairobiensis*, Sjostedt, 1933 (syn. nov.).

represents merely a subspecies of the *T. brevipennis*, but it appears wiser to regard it temporarily as a distinct species.

BIBULUS CAERULESCENS (Stal, 1876).

April, 5,200 ft., 1 ♀.

The synonymy of *B. brunni* Giglio-Tos 1907 with *Euprepocnemis caerulescens*, Stal, 1876, has been recorded by me recently elsewhere (Novitates Zoologicae, in Press).

(This species was definitely scarce; no other examples were noted.)

EUPREPOCNEMIS IBANDANA Giglio-Tos, 1907.

May, 5,600 ft., 1 ♂. (No other specimen was seen.)

CALOPTENOPSIS FERRIFER (Walker, 1870).

May, 5,400-5,600 ft., 6 ♂♂, 6 ♀♀.

(An extremely abundant species. It occurred in vast numbers in the grasslands, more especially at the north end of the range. Altogether 38 ♂♂ and 64 ♀♀ were netted.)

PLATYPHYMUS GRANULATUS, Uvarov, 1922.

April, 5,200, 3 ♂♂, 2 ♀♀; May, 5,200-5600 ft., 3 ♀♀, 3 ♂♂; July, 4,000 ft., 1 ♀.

Described from Baringo, Kenya, 4,000 ft.

(A very common species on the exposed lava slopes where the grass was not too high. When disturbed, they first dropped to the ground where their colour blended well with the black-brown lava gravel.)

TYLOTROPIDIUS, sp.

May, 5,000-5,600 ft., 2 ♂♂, 2 ♀♀; June, 5,600 ft., 1 ♀.

Species of this genus cannot be determined with any certainty until the genus is revised.

(Though scarce on Chyulu, this is an abundant species on the Emali range to the north. Their very long legs enable them to jump long distances, and when they alight they slip into the base of the grass tufts; they can then be caught with ease. They are loath to take flight at once.)

ABISARES VIRIDIPENNIS AZUREA, Sjostedt, 1909.

April, 3,800 ft., 2 ♀♀; June, 2,800 ft., 1 ♀.

(Was seldom noted on the high elevations, but frequently seen on the lower foothills.)

BYROPHYMA DEBILIS PICA, Uvarov, 1922.

April, 5,600 ft., 1 ♀. (No other example was taken; it was scarce on the range.)

RHYTIDACRIS TECTIFERA (Karsch, 1896).

July, 3,000 ft., 1 ♂. (An uncommon species and taken only on the lower foothills, on an acacia tree; its colour is very procryptic.)

ANACRIDIDIUM MOESTUM (Serville, 1839).

April, 3,800 ft., 1 ♂.

A very small specimen: length of body 44, elytra 46 mm.

(This species is almost entirely arboreal, having a definite preference for certain species of Acacia on which it feeds, both as imago and larva. Because of this habit, it is caught with considerable difficulty; one's net suffers in the attempt. If however one drives them from tree to tree, they eventually tire and take shelter on the ground where they can be netted more easily. When they alight on the Acacia branch they lie horizontally to the branch and as one approaches the tree they slip round to the far side and crouch. Their colour blends well with the tree stem or branch. In flight, the dark under-wings are distinctive.)

ORNITHACRIS CYANEA MAGNIFICA (L., Bolivar, 1886).

April, 5,200 ft., 1 ♂; May, 5,600 ft., 2 ♂♂, 2 ♀♀; June, 5,600 ft., 2 ♀♀; July, 5,600 ft., 1 ♂.

(In all, 18 males and 12 females were taken. Their flight is strong and they carry a long distance. The magenta underwings make this a conspicuous insect in flight. Because of their strong flight and in order to secure specimens, the first few were shot with a .410 and dust shot; we later on found them to be rather sluggish in the early morning and so fairly easy to catch.)

CYRTACANTHACRIS TATARICA (Linne 1758).

April, 5,400 ft., 1 ♀; May, 5,500 ft., 2 ♀♀.

(Seven examples in all were netted; it was not very abundant.)

ACANTHACRIS RUFICORNIS FULVA (Sjostedt., 1909).

April, 5,200 ft., 1 ♂; May, 5,500 ft., 1 ♂, 1 ♀; June, 5,600 ft., 1 ♂; July, 6,000 ft., 1 ♂.

(Of the total of 10 secured, six were females. Not common.)

CHONDRACRIS SANGUINEA (Sjostedt, 1812).

April, 5,400 ft., 2 ♂♂, 2 ♀♀; May, 5,500 ft., 1 ♀; June, 5,600 ft., 1 ♀; July, 5,600-6,000 ft., 2 ♂♂, 1 ♀.

(Fairly plentiful where the moreland was a good mixture of woody herbs and rank grass. When disturbed they sought shelter in the herbage.)

OXYRRHEPES PROCERA (Burmeister, 1839).

April, 5,200 ft., 1 ♂, 1 ♀; May, 5,500 ft., 1 ♀.

(We considered this rather rare on the range, and noted it only at the northern end. Its very pale colouration is noticeable in the field, both in flight and at rest.)

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